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BUILDING CAPACITY:

HOW A LOCAL GOVERNMENT AGENCY CAN SUPPORT PARTNERS IN OFFERING ENVIRONMENTAL EDUCATION FOR YOUTH

by

Alisa Reckinger

A capstone submitted in partial fulfillment of the requirements for the degree of Master of Arts in Education: Natural Science and Environmental Education.

Hamline University

Saint Paul, Minnesota

May 2017

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"Unless someone like you cares a whole awful lot,
nothing is going to get better. It's not."
– Dr. Seuss, The Lorax

I've heard often in the environmental field that ultimately it's humanity, not the planet, we are trying to save. Because the earth will persist in some form without us, we must work to make this world a better place for the people, plants and animals who live here today and the generations to follow. So it seems appropriate that this project was all about people.

In a world that can be full of challenges, hardships, degradation and naysayers, it's the people in my life - my family, friends, colleagues and classmates - that make me believe that the goals we are working toward are not only honorable, but achievable. You all provide me with a source of fuel and inspiration that is endlessly renewable: hope.

Specifically, to my parents and siblings for being my original adventure partners and for always encouraging me in pursuit of my passions. And to the little ones - my nieces and nephews - whose curiosity and energy reinvigorate a sense of wonder and awe in me that is central to a love of nature.

To my classmates and professors who became quick friends and allies and who continue to inspire and motivate me. I couldn't imagine better people to share this journey of learning and growth with.

To my colleagues, for wading through the weeds with me, pushing me to think differently and strive for improvement, and making me laugh along the way.

And to my project participants and environmental education partners. Your energy and enthusiasm for this topic was personally inspiring. Your passion and wisdom reminds me that we can and are changing the world for the better.

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CHAPTER ONE

Introduction

Building forts, swimming in the lake, running through the woods, making up stories about the rocks in my backyard, watching turtles lay their eggs, and seeing young eagles learn to fish – those are the shining memories of my childhood. I do not treasure the video games or TV shows from my youth, but I do remember the trees and the rocks and the water. The time I spent exploring and playing outside guided my decisions to pursue an education and a career focused on teaching others about environmental issues. In a world where kids increasingly are disconnected from the environment as they spend more time inside (Clements, 2004), my childhood experiences have also instilled a passion in me to ensure youth have similar opportunities to get outside and explore.

I now work for Hennepin County, the largest county by population in Minnesota, doing communications and outreach on environmental issues. Part of my job involves leading a team focused on evaluating and improving our efforts to provide environmental education for youth. More than 270,000 youth age 0 to 18 live in the county (U.S. Census Bureau, 2016). So although we engaged more than 20,000 youth in hands-on, inquiry-driven and action-focused environmental education in 2015, we face challenges in trying to serve our entire population and best allocate our limited resources of staff, time and money. Because of these challenges and limitations, we recognize that working with partners like schools, libraries, cities, park districts and nonprofit organizations are critical to effectively engaging our audiences and expanding our reach.

Through an assessment of our efforts, we have learned that the programs and resources that we provide are generally useful and successful. The evaluation of our youth environmental education programs has helped us make improvements to our existing programs and identify additional partnership opportunities. But in order to be more effective in supporting environmental education throughout the county, we need to better understand how our partners view environmental education and what barriers they face in offering it in order to determine the best strategies to pursue. This study will attempt to find those answers by addressing the question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth?

This chapter will further explore my personal and professional journey to my research question. It also explains the relevance to the county and its partners in providing environmental education.

Developing a connection to the outdoors

My connection to the outdoors began in my childhood, exploring the area around my family's home in a suburb of the Twin Cities in Minnesota and at our family cabin in Wisconsin. My family would often head to nearby parks to go hiking on the weekends, and I remember rowing a short way from the cabin with my siblings to the fort that we had built in the woods. Research has shown that significant life experiences in the outdoors, such as playing, hiking, camping and fishing, as well as sharing these experiences with family members and other role models are some of the most important reasons why people are motivated to protect the environment as adults (Chawla & Cushing, 2007). Although both the area around my childhood home and the cabin were in

fairly developed areas, the freedom to get out and explore was what mattered. This is where I developed my ecological identity and motivation to protect the environment. This also helped develop my belief that opportunities for environmental and outdoor education can happen anywhere. Being in the outdoors continues to be my reprieve, and I now spend much of my free time pursuing outdoor activities like biking, cross country skiing, hiking and kayaking.

Pursuing a career in environmental education

As I grew older, I began to realize that that the outdoor spaces I treasured needed to be protected. I also started to see how our everyday actions impact the environment. I began to understand the impact of the cars that we drive, the energy that we use, and the things that we purchase and eventually dispose of on ecosystems both locally and globally. This led me to apply my love for being active in the outdoors into a career focused on protecting the environment.

During my undergraduate studies, I pursued a degree in journalism and environmental studies. I began to understand how decisions are made about local environmental issues in college while reporting for a local newspaper, covering issues such as the need to expand a municipal power plant amidst desires to increase the use of renewable energy as well as the proposed sale of state forest service land. This experience helped me understand how policy issues are decided at a community level within local government agencies, and this knowledge has served me well in my career.

I graduated from journalism school knowing that I did not want to be a reporter. Although I valued the importance of telling the stories of issues, organizations and communities, my experience as a reporter made me realize that I wanted to feel more a

part of an organization rather than a neutral, outside observer. So shortly after graduating, I started an internship with the environmental department in Hennepin County in a role primarily focused on communications, more specifically explaining scientific information and promoting programs in a way the general public could understand and be motivated to act on. Throughout my nine-year career with the county, my role has expanded and evolved to focus increasingly on education and outreach. This involves leading our youth outreach team, supporting our environmental education grants programs, and giving training presentations to volunteers and partners on how they can motivate their audiences to take action to protect the environment.

As my job has increasingly incorporated planning and supporting environmental education programs, I realized that I had a lot to learn about best practices for environmental education. This is why I pursued a master's degree in environmental education through which I have learned more about environmental issues and how to develop programs and activities that help people understand and take action on those issues. The research in this paper represents an intersection of my master's degree studies and my professional career as it will further my understanding of effective environmental education programs while being useful to guiding decisions at my work.

Throughout my career, I have maintained a passion for connecting youth to the outdoors and helping them develop an awareness of environmental issues. Over the past two years, I have helped plan an environmental education field day for fifth grade students at a park on the Mississippi River. The kids spend the entire day outside, learning how to fish, exploring various ecosystems, and wading in the river to collect organisms to determine the health of the river. The program intentionally target schools

to participate that have underserved youth who may not get many of these opportunities. Although we know we are providing a unique and fun educational opportunity, the feedback from the students and teachers has helped me realize that the impact we have is even greater than we ever expected. Teachers say they appreciate the respect and trust we place in their students while engaging them in hands-on and fun learning opportunities because their students are often assumed to be difficult and challenging and rarely get such opportunities. For some of the fifth graders, this is their first field trip ever. These unexpected impacts and the enthusiasm and interest of the students throughout the day reignite my passion for providing these opportunities for more youth.

Despite the success of this program, challenges of limited capacity persist. The field day served 160 youth in the first year and expanded to 420 youth in year two. That number may increase as we expand to more sites, bring the maximum number of students on site, and add more days in future years. However, our capacity will still be smaller than the demand. This challenge holds true throughout all of the county's environmental education programs for youth.

The diversity in both geography and population in the county poses additional challenges. The cities in Hennepin County vary from urban to suburban to rural. The county includes Minneapolis – the biggest city in Minnesota – all of its suburbs and some rural and agricultural areas. Additionally, the county's racial and ethnic diversity is changing rapidly. From 2000 to 2013, the population of Hennepin County grew by 7 percent, while the population growth for people of color during the same time period was 48 percent. And that trend is projected to continue and intensify. Hennepin County is projected to have a 3 percent population growth from 2005 to 2035 but a 90 percent

population growth for people of color in that timeframe. And youth in the county reflect the increasing diversity in the county even more than older generations (Metropolitan Council, 2014; Minnesota Demographic Center, 2009).

The diversity in population and geography means that the county's 1.2 million residents have a wide range of lifestyles and interests, so outreach programs need to be customized to fit the needs of the specific audience. Considering the size and diversity of our population, we know that we do not have the capacity or the necessary connection to our specific audiences to effectively reach everyone. This is why we rely on partnerships; they allow us to combine our expertise in environmental issues and access to resources with our partners' connection to and knowledge of their audiences.

Understanding all of these challenges led to my interest in pursuing my research question. I want to know how we can most effectively engage youth in high-quality environmental education opportunities by addressing barriers and building on the interests and motivation of our partners. The next section will explore why environmental education is important to the county and to our partners.

Importance of environmental education

Beyond my personal interest, the question being pursued in this study needs to be useful and relevant to the county, our partners and the participants. All of the entities involved need to value environmental education for youth as a means to fulfill their organization's mission and goals and as an effective way to engage their audiences.

For the county, supporting environmental education aligns with the goals of promoting environmental stewardship, engaging communities, enhancing quality of life, and protecting the environment for current and future generations.

For entities interested in environmental protection, engaging youth in environmental issues is important because environmental education and outdoor experiences are critical to developing attitudes that are favorable to the environment and to adopting behaviors that protect the environment (Ledermann, 2013; NEEAC, 2015; NEEF, 2015).

Partners and educators may value environmental education even if their primary mission is not focused on environmental issues because it can be an effective way to engage youth in hands-on, real-world issues and activities. Environmental education has many benefits. It improves student achievement by taking an integrated, interdisciplinary approach. It increases youth engagement and enthusiasm for learning, fosters civic responsibility and gives youth greater ownership of their accomplishments by connecting the classroom to the real world. Additionally, it prepares the youth of today for issues they will face as adults because the environment is likely to be a dominant issue in the 21st century (Archie, 2003; Glenn, 2000; Lieberman & Hoody, 1998; NAAEE, 2010a).

Environmental education is important for the youth participants on both a local and global scale. By focusing on local issues and resources, environmental education can connect youth to their communities. It can help them understand the systems that they participate in every day, such as how the storm drains on their street connect to the stream or lake down the road, where the recycling or garbage they place in the bin at school ends up, or how they can recycle their fruit and vegetable scraps into compost right in their backyards. Environmental education can also help youth understand how the actions they take in their daily lives have an impact on issues at a global scale. The things that we choose to buy, how we decide to dispose of something, what we eat for dinner, how we choose to get around, the energy that we use charging our smart phones and

many additional actions we take every day have an impact on our global environment. We all play a role in the condition of the Earth's climate, ecosystems, and biodiversity, not to mention the quality of life for humans around the world. So although the actions we take may be local, the implications are global. Environmental education plays an important role in helping youth understand those connections.

Summary

Because of the value and passion I place on environmental education and the challenges we face meeting the needs of our communities at the county, my goal of providing high-quality environmental education experiences to more youth can seem daunting. This is especially true because I feel like I still have a lot to learn. Through my personal experiences, studies and work, I have gained a good understanding of the benefits of environmental education. I also understand how environmental education aligns with the county's mission and goals and how our various programs have been successful. Additionally, some of our most active partners have shared with us why they value offering environmental education to their audiences.

However, we need to gain a better understanding from our partners how they define environmental education, how it aligns with their missions and goals, and what they perceive to be the barriers and benefits to offering environmental education. That feedback will help me answer my research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth. It will also help the county identify the most effective strategies to pursue to address barriers and enhance environmental education efforts.

The next chapter includes a literature review of how environmental education is defined, the history of environmental education, environmental education's goals and key elements, strategies that have been used to support environmental education, and common barriers and benefits to offering environmental education. The following chapters including an overview of how my research was conducted, a summary of the feedback and insights gathered from partners through group conversations and a survey, an analysis of how this feedback connects to the literature review, and a summary of lessons learned, opportunities for additional research, and next steps.

CHAPTER TWO

Literature Review

Before investigating the research question, what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth, understanding some history, background and context is important. Chapter one summarized my personal experience and interest in this project. This chapter will examine what leaders and experts in the field have to say about various topics related to the research question.

Specifically, this chapter will review and summarize the definition, history and guiding principles of environmental education; the roles that various organizations and entities play in environmental education; the resources, strategies and best practices that have been developed to support environmental education; and the benefits of and barriers to environmental education. The first section looks at the definition and history of environmental education starting with the field's foundations and predecessors, then looks at national and state environmental education policy, guiding principles and current trends impacting the field. The second section explores the goals, objectives and key elements of environmental education. The third section considers the sectors that organizations and program types are typically separated into and the more specific roles that various organizations play in environmental education. The fourth section reviews strategies, resources and best practices for offering environmental education, including program development and evaluation, curricula and activity guides, professional development, and green buildings and grounds. Finally, the last section describes

common benefits of and barriers to environmental education for educators, participants, the community, and administration and leadership. This review of the current literature provides the relevant background and establishes the need for a study to answer the research question.

Definition and history of environmental education

Environmental education is a process of lifelong learning that focuses on both knowledge gain and behavior change and integrates the economic, political, social, physical and natural systems that influence environmental issues (UNESCO-UNEP, 1978). Although this internationally recognized definition and guiding principles of environmental education was established in the 1970s, environmental education is based on various educational thoughts and movements dating back to the 1700s. This section covers the history and foundations of environmental education on an international, national and state level and examine trends currently impacting the field.

History of environmental education

Foundations of environmental education. The definition, objectives, and guiding principles that provide direction for the field of environmental education were established as the result of a series of international conferences in the 1970s. The United Nations Conference on Human Environment, held in Stockholm, Sweden in 1972, declared that environmental education is essential for youth and adults and recommended the development of an environmental education program on an international level (Athman & Monroe, 2001; Monroe & Krasney, 2015). This led to the Belgrade Charter in 1975 that established the definition and goals for environmental education that are still widely used today (Monroe & Krasney, 2015). That goal is to develop a global population that is

aware of and concerned about the environment and that has the "knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions to current problems and the prevention of new ones" (UNESCO, 1975, p. 3).

Building on the work of the Belgrade meeting, the first international conference on environmental education was held in Tbilisi, Georgia in 1977. The resulting Tbilisi Declaration established an international framework for environmental education for all age groups both inside and outside the formal education system by adopting the definition of and outlining the objectives for environmental education, which are to develop the awareness, knowledge, attitudes, skills and opportunity for participation in environmental issues and action (UNESCO-UNEP, 1978).

Predecessors to environmental education. Although the founding definition and objectives of environmental education that are still used today were established in the 1970s, environmental education evolved from the distinct fields of nature study, conservation education and outdoor education that started much earlier.

Nature study involved learning about the natural history of plants and animals and focused on connecting people to nature. Nature study emphasized the observation of nature while in the outdoors and was based on the theories of various scholars in the 1700s and 1800s that called for returning to nature, educating the whole person through learning-by-doing, and using experiential learning to promote civic participation (Monroe & Krasney, 2015). This type of education gained popularity in the late 1800s and early 1900s driven in part by the concern that urban youth were becoming disconnected from nature as cities began to develop. Environmental education today uses a variety of practices from nature study including the use of first-hand observations,

inquiry, discovery and generating excitement about the natural world (Athman & Monroe, 2001).

Conservation education developed in response to soil erosion and flooding issues experienced during the Dust Bowl era in the 1930s. Conservation education was led by U.S. government agencies with the goal of increasing awareness about conserving natural resources and using resources wisely. Programming involved giving land to schools for ecosystem studies and involving community and faith-based organizations in helping to promote a connection to and understanding of the natural world (Athman & Monroe, 2001; Monroe & Krasney, 2015)

Outdoor education is a teaching method that expanded during the 1950s out of concern that urban students were disconnected from nature (Athman & Monroe, 2001). Outdoor education focuses on using the best setting for the topic being studied and integrating outdoor learning into subject areas beyond science to enhance appreciation for the natural world and develop outdoor knowledge and skills (Monroe & Krasney, 2015).

Although environmental education uses elements of nature study, conservation education and outdoor education, some primary differences are environmental education's emphasis on relationships between natural and social systems and focus on behavior change (Monroe & Krasney, 2015; UNESCO-UNEP, 1978). Environmental education gained momentum in the 1960s as awareness and concern about the human impact on the environment grew. Recognizing the limitations of the narrow focus of outdoor and conservation education, leaders in the development of environmental education called for a field that took a more holistic approach to environmental issues and

emphasized problem-solving, skill development and environmental literacy (Monroe & Krasney, 2015; NEEF, 2015).

History of national and local environmental education policy. Since getting its start in the 1960s and 1970s, policy support and funding for environmental education has fluctuated both nationally and locally. Environmental education in the United States and in Minnesota have followed similar trajectories, with both providing early leadership and support in the 1970s, decline of support throughout the 1980s, reinvigoration of efforts in the 1990s, and varied support in the 2000s.

With the passage of the national Environmental Education Act in 1970, the U.S. became the first country to establish a national environmental education policy (Monroe & Krasney, 2015). The act established the Office of Environmental Education and provided funding to implement environmental education programs in K – 12 schools. Although this act only had a lifespan of five years and received limited funding, the 1970s was a time of capacity building for environmental education in the United States. This included the growth of environmental education coordinators in schools, development of curriculum, formation of the North American Association for Environmental Education (NAAEE), and publication of the *Journal of Environmental Education* (Carter & Simmons in Bodzin, Klein & Weaver, 2010).

The 1960s and 1970s were also a time of growth for environmental education in Minnesota, with schools receiving federal support to establish school forests, the Minnesota Department of Natural Resources and the Minnesota Department of Education working together to develop and support environmental education curriculum, and the state receiving funding to develop the first state-level plan for environmental education,

which called for the formation of 13 regional environmental education councils. These councils were later eliminated in the 1990s. Funding and support for implementation of the plan was limited and fluctuated (Ledermann, 2010).

Nationally during the 1980s, some environmental regulations were repealed or weakened and support for environmental education declined (Carter & Simmons in Bodzin et al., 2010). In Minnesota in the 1980s, environmental education efforts by private businesses, nonprofit organization and government agencies expanded; however, there was little coordination or common goals (Ledermann, 2010).

The passage of a new National Environmental Education Act in 1990 revived support for environmental education. The law established the U.S. Environmental Protection Agency (U.S.,EPA) as the national leader for environmental education and required the U.S. EPA to collaborate with state, regional and local entities to improve awareness of effective solutions to environmental issues (NEEAC, 2015). The act focused on schools as a key setting for environmental education while recognizing the importance of nonformal education (Athman & Monroe, 2001). Funding for the National Environmental Education Act fluctuated over the years, and the act was never fully funded (NEEAC, 2015).

Similarly in Minnesota, the Minnesota Environmental Education Act of 1990 sought to increase collaboration and establish leadership. The act created the Environmental Education Advisory Board that was comprised of citizens and representatives from state agencies, defined environmental literacy goals for Minnesota youth and adults, and mandated that environmental education be taught in Minnesota schools. The act also led to the development of the first *GreenPrint: A State Plan for Environmental Education* in

1993 and established a position for environmental education within the Minnesota Department of Education (Ledermann, 2010).

These efforts in Minnesota led to a time of relatively stable support and leadership for environmental education during the mid-1990s to 2000s. SEEK (Sharing Environmental Education Knowledge), which is the state's home for environmental education resources, was established in 1996, and the state Office of Environmental Assistance employed five full-time environmental education specialists and awarded grants for environmental education projects. The *Environmental Literacy Scope and Sequence*, which provides guidance for integrating environmental education into Minnesota state standards, and the second and third edition of the *GreenPrint State Plan for Environmental Education* were developed in the 2000s, and the Minnesota Department of Education had an environmental and outdoor education advisory committee that supported integration of environmental education into state standards (Ledermann 2010; MDE, 2011).

Meanwhile on the national level, the NAAEE took the lead on professionalizing and standardizing the field of environmental education through the *National Project for Excellence in Environmental Education*. This project was pursued after environmental education was criticized in 1990s for being biased and too focused on advocacy. The resulting guidelines refocused education on skill development and best practices, provided direction for developing environmental education materials, and established benchmarks for both educator and student knowledge on environmental issues. The NAAEE has continued to update the guidelines and produce additional sets of guidelines as needed (Carter & Simmons in Bodzin et al., 2010).

Support for environmental education has varied in the 2000s. Environmental education was left out of the Elementary and Secondary Education Act (No Child Left Behind Act), and efforts to reinstate the National Environmental Education Act have failed. At the same time, research into the benefits of connecting people to the nature has generated renewed interest in and advocacy efforts for environmental and outdoor education. In 2015, the Every Student Succeeds Act, which reauthorized the Elementary and Secondary Education Act and replaced No Child Left Behind, made environmental education activities eligible for federal education funding for the first time. Although no formal national requirement for environmental education is in place, the integrated and interdisciplinary approach to environmental education that is focused on critical-thinking skills, problem-solving and real-world issues aligns well with the national and state standards for science, language arts, social studies and math (Carter & Simmons in Bodzin et al., 2010; NAAEE, 2015).

Support for environmental education at the state level in Minnesota has declined in recent years due to budget cuts and changes in staffing and priorities. The economic recession and state budget shortfalls eliminated nearly all state funding for environmental education, and the Environmental Education Advisory Task Force and many state environmental education positions have been cut (Ledermann, 2010).

Environmental education continues to be supported at a national level by the U.S. EPA, which provides leadership, grants, training opportunities and resources; the NAAEE, which provides training and networking opportunities, research and resources, and guidelines for excellence; and the National Environmental Education Foundation (NEEF), which conducts campaigns and research and pilots environmental education

programs (U.S. EPA, 2016; NAAEE, n.d.; NEEF, n.d.). However, the ability of the EPA to provide environmental education leadership on a national level is currently being threatened. The president's 2017 proposed budget cuts the EPA's environmental education funding by 94 percent from $8.7 million to $555,000 annually (Davis, 2017). Environmental education leadership in Minnesota is provided by SEEK, which is a program of the Minnesota Pollution Control Agency that provides environmental education resources; the Minnesota Department of Natural Resources, which supports training and dissemination of environmental education curriculum; and the Minnesota Association of Environmental Education, which is the state affiliate of the NAAEE and provides training and networking opportunities (SEEK, n.d.; MN DNR, n.d.; MAAEE, n.d.).

Trends impacting environmental education

As the environmental education field continues to grow and evolve, the definition, goals and objectives established in the Belgrade Charter and Tbilisi Declaration have been researched, revisited and found to still serve as a solid foundation (NAAEE, 2010a). However, politics, current environmental issues, social priorities and changes in educational policy have always influenced environmental education (Monroe & Krasney, 2015). The National Environmental Education Advisory Council (NEEAC, 2015) explains that at this point in history, people around the world have never depended upon yet been so disconnected from the environment and the resources it provides. Additionally, humans have never faced such impending threats posed by global environmental issues that are so closely connected to human actions as that of climate change, biodiversity loss and population growth (NEEAC, 2015). Some of the most

important trends currently impacting environmental education include increased urbanization, changing demographics, the growth and popularity of technology, the emergence of new environmental issues, and a new focus on education for sustainable development.

Urbanization. People are increasingly living in urban areas, which presents new challenges for connecting people to the natural world and motivating action around environmental issues. As of the 2010 census, more than 80 percent of people in the U.S. lived in urban areas, and by 2050, more then two-thirds of the world's population is projected to be living in urban areas (NEEF, 2015; U.S. Census Bureau, 2012). The trend toward urbanization will continue, with the United Nations Population Fund (2007) calling the scale of urbanization projected to occur through 2030 unprecedented.

With people increasingly living in urban settings, Monroe and Krasney (2015) explain that environmental education plays an important role in helping people understand that they are part of the environment no matter where they live. NEEAC (2015) adds that increasing urbanization needs to be accompanied by an expanding definition of what is considered the environment with a growing understanding that the environment is everything and that people everywhere are deeply connected to the natural world. Living in an urban environment does not necessarily decrease an individual's understanding of the environment. According to the National Environmental Education Foundation (NEEF, 2015), there is no research that urban residents are more or less environmentally literate than people living in rural settings. Additionally, urban settings present plenty of environmental issues for environmental education to focus on, including water quality and quantity, pollution, and food and energy systems (NEEF, 2015).

Changing population. The population around the world and in the U.S. is growing rapidly. The world population grew from 1.6 billion to 6.1 billion between 1900 and 2000, with nearly 80 percent of that growth occurring since 1950 (United Nations, 2001). The population in the U.S. has more than doubled since 1950 to 300 million (NEEF, 2015).

The global population increase has occurred along with rising standards of living, which means that the human population is increasingly using natural resources unsustainably (United Nations, 2001). However, interactions among demographic changes, the environment and development are complex, so although many environmental problems result from human activities, the direct relation to population growth varies. Population growth impacts natural areas and ecosystems, soil health and deforestation in relation to food production, water in relation to supplies for irrigation and pollution from runoff, and marine life as it relates to overfishing. Although population growth can intensify or worsen environmental problems, it is important to also consider social, economic and technological factors as these are often just as or even more important. For example, economic growth and the expansion of technology is a more important driving factor for increasing air and water pollution than population growth (United Nations, 2001).

The growing population is also increasingly culturally diverse. In 2012, for the first time in U.S. history, the majority of babies were born to people of color. And by 2050, the non-Hispanic white "majority" will be the minority (NEEF, 2015). NEEAC (2015) explained that the most pressing environmental issues, such as climate change, food scarcity, and water and air pollution, often disproportionately impact communities of

color. And people of color tend to support environmental action as much or more than the white population (NEEF, 2015).

However, there is disparity between the makeup of the general population and the audience that teaches and participates in environmental education activities. In 2015, about 75 percent of youth participating in outdoor recreation were white, and the level of participation among youth of color has remained unchanged in the past five years or so (NEEF, 2015). Additionally, students of color tend to have negative attitudes toward science and have less interest in science as they approach middle school (Brown, Votaw & Tretter in Bodzin et al., 2010). People of color comprise about 38 percent of the U.S. population, but represent only 16 percent of the staff or board members for environmental organizations and even fewer hold leadership position (Taylor, 2014). This means that staff and leadership may not understand the varying interests and needs of different groups, and environmental organizations may struggle to make their programming relevant to all audiences. For example, different cultures have different values toward the outdoors, and certain groups may not understand the rules for accessing parks and natural areas and may not know how to find that information. Additionally, because environmental educators and leaders typically do not reflect the diversity of the population they are trying to reach, students of color often do not have role models that look like them in the environmental field (NEEAC, 2015; NEEF, 2015).

Taylor (2014) explains that some of the reasons why professionals in the environmental field do not reflect the diversity of the population is because few environmental organizations collaborate with ethnic minority or low-income organizations, recruitment for jobs in environmental organizations is not effective at

reaching minority populations, and environmental organizations have no one dedicated to diversifying their staff and leadership. This disparity speaks to a need for increased efforts to engage more diverse populations by focusing on diversifying professionals working in the environmental education field and developing relevant programs that are customized to the different values and desires that varying cultural groups have for outdoor and environmental programs (NEEF, 2015).

Paying attention to changes in the age of the population and generational differences in environmental concern and action is also important. The U.S. population is getting older. By 2050, one in five Americans will be over the age of 65. This will produce a wave of retirements, and young people need to be prepared to take the jobs of both those retiring in the environmental field as well as in the workforce overall in positions that are addressing current and future environmental and social challenges. As youth are preparing for the workforce, it is important to keep in mind that changing technology means that the jobs they are taking are likely to be different than when the older generations first started them. And the influx of retirees can be an important source of volunteers for environmental organizations and mentors for the future generation of environmental professionals and citizens (NEEF, 2015). Understanding generational differences in environmental literacy and interest is also important when working with today's youth. In a study comparing surveys among older and younger generations, Twenge, Campbell and Freeman (2012) found that Millennials, which are young people born after 1982, show less interest in taking action to protect the environment or being civically or politically engaged compared to older generations. However, Millennials may be engaged in different ways than older generations as they show higher rates of

volunteerism and may participate in political activities in newer and different ways (Twenge et al., 2012). Furthermore, The Nature Conservancy (2011) found that youth are concerned about the environment and value taking action to protect it.

Technology. Technological advancements continue to rapidly change the world, but technology creates tension within the field of environmental education providing both challenges and opportunities. Environmental educators have used technology to collect data, make data more accessible and understandable, connect learners to far-away landscapes or experts, conduct modeling to manipulate environmental conditions, and use storytelling for self-discovery, expression and sharing (Peffer, Bodzin & Smith, 2013; Smith in Russ, 2015; Shmulenson, Baron, Morena, Smith and Agenello in Russ, 2015). But although technology can be a critical tool for engaging people in environmental issues, it can also get in the way of connecting people to the natural world (NEEF, 2015; Peffer et al., 2013; Shmulenson et. al. in Russ, 2015).

One of the biggest impacts of technology, especially the internet, social media and proliferation of mobile technologies, is changes in the way that people get information. With more people getting their news and information from online sources, it is easier for people to access large amounts of information quickly and to select information specific to their interests and in support of their beliefs. This increases the importance of developing skills to evaluate the reliability and accuracy of sources of information, especially about scientific and environmental topics (Monroe & Krasney, 2015; NEEAC, 2015). At the same time, social media and mobile technology can make it easier to spread the word about environmental issues and help people learn about things going on in their community (Monroe & Krasney, 2015; NEEF, 2015).

Advancements in technology have also led to an increased focus on green jobs and STEM (Science, Technology, Engineering, and Math) education. As technologies emerge to help solve environmental problems, people, especially young people that will be entering the workforce in the near future, need to have the skills and creativity to understand and address the complex environmental issues that the world now faces. Environmental education that integrates technological developments can play an important role in preparing people for the 21st century workforce and addressing environmental issues (NEEAC, 2015).

Despite the potential conflicts between technology and environmental education, the reality is that technology will continue to be a part of our modern world. Learning how to successfully integrate technology while maintaining a focus on connecting people to the environment is a critical issue for the field of environmental education. Technology can be an opportunity to share experiences, support inquiry, and serve as an entry point to exploring ecosystems. Research on the impacts of technology on environmental education and environmental literacy is limited, but there are successful examples that can be used as models for the field to build upon (Monroe & Krasney, 2015; NEEAC, 2015; NEEF, 2015; Shmulenson et. al. in Russ, 2015).

Emerging environmental issues. Environmental issues of greatest concern have changed throughout the1800s and 1900s. Early concern focused primarily on conserving land and ecosystems and evolved to focus more on improving environmental quality, reducing pollution, raising awareness and increasing environmental literacy (Carter & Simmons in Bodzin et al., 2010).

The environmental issues that the world now faces are increasingly global, complex, and interconnected. They include climate change, biodiversity loss, habitat destruction, resource scarcity, and population growth (Monroe & Krasney, 2015; NEEF, 2015). Climate change, for example, has connections to nearly every other environmental problem that society has faced over the past 40 or more years while also presenting problems that are larger, more interrelated, more complex and of greater consequence that any prior environmental issue. Additionally, unlike specific instances of pollution or environmental degradation, people cannot blame others for causing the environmental problems that the world is facing today because everyone contributes directly or indirectly to the actions causing the problems (Marcinkowski, 2010).

NEEF (2015) explains that one way to address environmental threats is by creating social change through education. Tackling the large and complex environmental issues of today may require a shift in environmental education with an increasing focus on sustainability, including energy, food, transportation and infrastructure systems (Kennedy & Stromme, 2008). Marcinkowski (2010) encourages a shift in environmental education from the reactive approach of problem-solving to a forward-thinking approach that involves envisioning a more sustainable future. This would involve preparing people to both participate in solutions to ongoing environmental issues and contributing to more sustainable societies that do not contribute to environmental problems (Marcinkowski, 2010).

Education for sustainable development. In recent years, there has been an increased focus internationally on education for sustainable development. Sustainable development was first mentioned in the 1980 World Conservation Strategy and was more clearly

defined in the 1987 Bruntland Report, which stated that sustainable development meant that humanity can "meet the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987, note 27). The Earth Summit, held in Rio de Janeiro in 1992, established mandates for sustainable development that involved improving access to quality education that refocused on sustainability themes (Monroe & Krasney, 2015). The Tbilisi +35 International Conference for Environmental Education for Sustainable Development held in 2012 to check in on the progress of achieving the goals, objectives and visions of the Tbilisi Declaration represented a shift of focus to education for sustainable development, and the United Nation's Millennium Development Goals cite environmental education as particularly relevant to the pursuit of environmental sustainability (Monroe & Krasney, 2015; UNESCO-UNEP, 2012).

The relationship between environmental education and education for sustainable development is not clearly defined or understood. Marcinkowski (2010) explains that education for sustainable development has a broader scope than environmental education because it includes social goals such as ensuring access to food, water, healthcare and education; economic development goals such as alleviating poverty and improving quality of life; and technological goals of using cleaner and more efficient technologies to address community problems. According to Monroe and Krasney (2015), education for sustainable development puts equal weight on the importance of society, economy and environment.

Marcinkowski (2010) suggests that sustainable development could be the next evolution for the environmental movement, following the preservation, resource

management, and environmental quality movements. Monroe and Krasney (2015) explore the debate about whether education for sustainable development's focus on economics, ethics and values separates that field from environmental education or if those issues are also of critical importance to environmental education. They go on to suggest that the difference between education for sustainable development and environmental education may be in their primary focus and goals, with environmental education focused on protecting the environment through problem-solving and critical-thinking while education for sustainable development focuses on fostering development while minimizing impact through the promotion of sustainable behaviors. Marcinkowski (2010) explains that it may be beneficial for environmental education to continue to be considered a separate field as expanding the scope of environmental education to include the added goals of education for sustainable development could blur the mission and identity of environmental education.

Definition and history summary

The broad, interdisciplinary nature of environmental education has always presented both opportunities and challenges for the field, which is why understanding its history, definition and goals are important for environmental educators. Borrowing elements from the fields of nature study, conservation education, and outdoor education, the groundwork for the field of environmental education was laid in the 1970s and focused on integrating the interaction of human and social systems with natural systems. Despite recognition of the importance of environmental education, policy support and funding has fluctuated at the international, national and state level. Additionally, environmental education must continually adapt to a variety of current trends, including changing population and

demographics, prevalence of technology, emerging environmental issues, and a newer focus on education for sustainable development. The next section will review the goals, objectives and key elements of environmental education.

Goals, objectives and key elements environmental education

The primary goal of environmental education is to develop environmental literacy. Someone who is environmentally literate has the concern, motivation and ability to make informed decisions about the environment on an individual level as well as the knowledge and willingness to participate in civic life in order to work toward solutions to environmental problems within their community (NEEAC, 2015; NEEF, 2015). In order to be environmentally literate, people need to be able to ask questions and develop hypotheses about the world, seek and evaluate the reliability of information to answer those questions, identify and evaluate potential solutions, and possess the skills and motivation to take action (Carter & Simmons in Bodzin et al., 2010). A central belief of environmental education is that people can make informed decisions about the environment with future generations in mind (NAAEE, 2010a).

The objectives of environmental education as established in the Tbilisi Declaration focus on what people need in order to make informed decisions and take action on environmental issues. These include awareness and sensitivity toward the environment, knowledge about the environment and related issues, attitudes that are favorable to protecting the environment, and the necessary skills and efficacy to participate in environmental action on an individual and community level (UNESCO-UNEP, 1978). Additional factors that have been found to contribute to environmental action include a personal feeling of control and responsibility and verbal commitment or intention

(Marcinkowski, 2010). Chawla and Cushing (2007) add that in order for someone to take action, they need to value environmental protection, know enough about the issue and understand the consequences to themselves or things they care about, and believe they can have an impact on the issue. Yet still, whether or not they take action depends on the scale of the barriers they face.

Key elements of environmental education include learning that focuses on investigating issues and knowing how to apply knowledge to making informed decisions and taking action. It involves being interdisciplinary and student-centered. Environmental education also explores the interrelationships of natural and social systems, is active and experiential, is place-based, is grounded in the real world, is relevant to people of all ages and backgrounds, and uses a variety of educational settings and approaches (Monroe & Krasney, 2015; NEEAC, 2015; Stern, Powell & Hill, 2014; UNESCO-UNEP, 1978).

Going beyond knowledge

To attain the goal of developing environmental literacy, environmental education emphasizes a process of gaining knowledge, developing attitudes, building skills, taking action and making decisions that protect the environment (NEEAC, 2015). NEEAC (2015) explains that focusing on the process of learning about an issue and taking action instead of teaching specific behaviors to specific topics is necessary because the environmental and social systems that people act in as individuals and community members are diverse, complex and unique. Additionally, going beyond knowledge is important because feelings, values, attitudes and perceptions are all involved when exploring, analyzing and finding solutions (Archie, 2001). Critical skills that

environmental education seeks to develop include knowing how to ask questions, seek information and evaluate solutions (NEEAC, 2015).

Teaching participants how to examine an issue and develop solutions is also important in order to maintain a fair and balanced approach to environmental education and to ensure that participants are focused on the most effective actions. Monroe and Krasney (2015) explain that the extent to which environmental education should promote certain behaviors versus giving learners the skills to explore and evaluate behaviors to make informed decisions is a source of debate because promoting specific behaviors can seem biased. So although many environmental education programs use a specific topic, such as conserving water or recycling, as the context for learning, the focus should be on developing the competency to think critically about an issue, identify solutions and potential consequences of those solutions, and make informed decisions (NEEAC, 2015). Chawla and Cushing (2007) add that collective action, or things that people work on collaboratively in their communities, are needed in addition to changes in individual behaviors in order to address the scale of environmental problems that we are currently facing. According to the NAAEE (2010a), environmental education should enhance a learner's capacity to think independently, develop a sense of personal commitment, and take effective, responsible action.

Understanding systems

Although environmental education is often considered to belong in science education, environmental education is an interdisciplinary field that focuses on the complicated interactions between people and the environmental resources they depend on (Stevenson, Carrier, & Nils Peterson, 2014; NEEAC, 2015). This inclusive focus is necessary because

people need to understand the connections and interactions among social and natural systems in order to make informed decisions about the environment (NAAEE, 2010a).

Landers, Naylon and Drewes (2002) explain that understanding systems means knowing the basic elements of both natural and social systems, understanding their interactions, and knowing how solutions are developed within those systems. The social systems that people have created, which include economics, politics, communities and religions, are a part of, rely on, and impact natural systems. The solutions created to address problems within those systems are often complex, and complex problems can have unforeseen consequences. The researchers add that when learning about systems, it's important to understand that there is usually a difference between the ideal way for systems to operate and the reality of how they operate in the world. Often education teaches the ideal while people are left to learn reality on their own. Instead, it would be more effective for educational programs to teach learners both the ideal and the real way that systems operate (Landers et al., 2002).

Maintaining relevancy and applicability to the real world

Because environmental literacy is focused on decisions and actions that people take throughout their lives, environmental education is a lifelong process that is grounded in real world issues and driven by the learners' interests. The NAAEE (2010a) explains that a goal of environmental education is to foster curiosity and enthusiasm by providing early and continuing opportunities to explore and learn about the environment, and learning should be developmentally appropriate. Developing a connection to and sensitivity toward the environment while focusing on small-scale actions within the local environment is especially important for younger age groups. Middle and high school

aged youth can start to learn about collective, civic actions and how to influence local policy (Chawla & Cushing, 2007). Additionally, environmental education should focus on investigating causes of real-world environmental issues that are of interest to the learner and use diverse learning environments and methods to strategically analyze the best way to solve problems (UNESCO-UNEP, 1978).

Using a variety of settings and educational approaches

Environmental education programs use a variety of educational approaches and settings, including outdoor education, place-based learning, environmental action planning, environment-based education, citizen science and service learning. Environmental education programs may use elements from a variety of these approaches as these strategies commonly intersect and overlap.

Outdoor learning can take place in a variety of settings, ranging from a schoolyard or local park to larger wildlife and park reserves. Outdoor learning provides opportunities for students to learn science topics in context, develop awareness of and concern for the natural world, engage in a variety of teaching and learning opportunities, and feel empowered to take action to protect the environment (The Nature Conservancy, 2011; Sadler, Saunders & Winther in Bodzin et al., 2010).

Place-based learning is rooted in the community, immersing students in the local environment, history, culture and resources and encouraging action in community processes. A core idea behind place-based learning is that personal commitment and motivation start with a connection to one's immediate surroundings while also helping learners grasp broader and more distant topics (Athman & Monroe, 2015; Monroe & Krasney, 2015; Sadler et al. in Bodzin et al., 2010). This approach can be especially

important for urban youth because they may otherwise view themselves as separate from the environment. Exploring the biodiversity and environmental quality of natural areas in cities, using amenities likes parks, trees and green infrastructure, and including citizen science or other field studies, investigations and community projects can be effective ways to conduct urban place-based learning (Russ & Krasney in Russ, 2015). Chawla and Cushing (2007) add that involving parents and families when youth are doing community projects is important as children are more likely to participate in community activities if parents also take action or give youth encouragement to become involved.

Environmental action planning focuses on identifying and pursuing solutions to environmental problems. These types of programs engage participants in examining issues, understanding the points of conflicts and differing viewpoints, considering the benefits and consequences of various actions, and creating action plans to address an issue. Instead of focusing on a specific behavior, environmental action projects focus on addressing the root cause of an environmental issue and developing the participants' capabilities as citizens. These types of programs see positive youth development, community improvement and engagement in civic processes as valid outcomes of environmental education (Chawla & Cushing, 2007; Monroe & Krasney, 2015; Russ & Krasney in Russ, 2015; Sadler et al. in Bodzin et al., 2010; Schusler & Krasney, 2010).

Environment-based education goes beyond supplementing curriculum with environmental activities or field trips and involves using environmental issues as a context for learning in all subject areas. The State Education and Environment Roundtable used this approach, which they termed Environment as an Integrating Context, in the 1990s. Through a cooperative teaching models, students were engaged in

multidisciplinary learning that focused on providing opportunities to connect to the community and real-world issues, understanding the interactions among different subject areas, and developing problem-solving and basic life skills (Lieberman & Hoody, 1998). Environment-based learning has a longer duration than most environmental education programs, helps students understand connections in core subject areas, and is a way to integrate environmental education into standards instead of it being an extra that teachers need to fit in (Ernst, 2012; Lieberman & Hoody, 1998).

Citizen science programs get students in a class or groups of youth involved in collecting scientific data. These programs provide hands-on learning opportunities, increase participants' understanding of the scientific process, and help youth see how the data relates to protecting the environment (Monroe & Krasney, 2015).

Civic ecology and service learning are similar educational ideas that involve carrying out hands-on restoration and stewardship projects that benefit the community. These types of projects achieve numerous goals, including making learning relevant and meaningful, providing enrichment for both the community and the learner, enhancing ecosystems, and creating and maintaining green infrastructure. By helping participants see how their actions can contribute to community change, these projects also build competence and increase the tendency to engage in civic action in the future. Examples of civic ecology and service learning projects include community gardening, removing invasive species, restoring habitats and planting trees (Monroe & Krasney, 2015; Roche, Brown & Shmulenson in Russ, 2015; Russ & Krasney in Russ, 2015).

Summary goals, objectives and key elements

Understanding the goals, objectives and key elements of environmental education is important to developing effective strategies. The primary goals of environmental education is to develop environmental literacy, and key elements to achieve that goal include going beyond knowledge to develop critical thinking and problem-solving skills, understanding systems, and maintaining relevancy to real-world issues. The goals and key elements of environmental education can be carried out through many different educational approaches. The next section will consider the roles of various organizations in carrying out environmental education.

Roles in environmental education

Environmental education is a diverse field that takes place in a variety of settings, including in schools, early childhood education programs and afterschool programs, through community organizations, and at nature centers, museums and parks. The community of environmental education professionals is also wide-ranging. It includes teachers and naturalists; planners and leaders in environmental education policy, programming and funding; professors and researchers at universities; and staff at nonprofit organizations, community groups and faith-based organizations (Kennedy & Stromme, 2008; Fleming, 2009; NAAEE, 2009). This section examines three common sectors of environmental education, the responsibilities of environmental educators, and the more specific roles of various entities and organizations.

Environmental education sectors

Environmental education is commonly split into three sectors: formal, nonformal and informal. These sectors differ in how they reach their audiences, the type of programming they offer, and the organizations that are involved.

Formal environmental education is offered within the structured school system ranging from primary school through university (Fleming, 2009). Schools and institutions define the goals and strategies in formal environmental education to comply with standards. Environmental education is typically not required in these settings, and it may be a separate subject or may be integrated throughout subject areas (Monroe & Krasney, 2015).

Nonformal environmental education includes organized activities outside of the structured school system that serve a specific audience and have identified learning objectives (Fleming, 2009). Nonformal environmental education includes programming offered by parks, nature centers, museums, zoos, youth activities, and volunteer training programs. These programs often provide more ongoing learning opportunities, and the objectives for these programs are tailored to the learning needs of the audience and the mission of the organization (Monroe & Krasney, 2015).

Informal environmental education often includes shorter-term or more instantaneous activities that are not offered through a formal program. This includes messaging and activities offered through family, work, museums, mass media, play and recreation locations, educational fairs and events, and libraries (Fleming, 2009; Monroe & Krasney, 2015).

Responsibilities of environmental educators

Environmental educators work in a variety of settings and have a variety of jobs. They may be teachers in schools, educators at nature centers, museums, zoos and parks, professors at universities, or program coordinators at nonprofit organizations or community and youth groups. There are people who work to develop resources, offer

training, and support networks, programs and policies. For some, environmental education is their full time job, while for others, environmental education is something they fit in among many other responsibilities (Monroe & Krasney, 2015). According to guidelines established by the NAAEE (2010b), environmental educators all have common professional responsibilities regardless of what sector they work in. These include providing quality education, understanding the foundations of environmental education, and seeking ongoing learning opportunities to stay up-to-date on best practices and developments in the field.

Providing quality education includes aligning environmental education with applicable standards and goals, modeling environmentally responsible behaviors, emphasizing balanced and fair education over advocacy, seeking out appropriate partnerships, and fostering a learning environment that encourages exploration of the environment and environmental issues. Elements of environmental education that educators need to understand include the goals and objectives of environmental education, the focus on environmental literacy and systems-thinking, the interdisciplinary approach, the variety of instructional methods and settings, and trends and emerging issues (NAAEE, 2010b).

Chawla and Cushing (2007) add that environmental educators should be aware of the important function they play as role models for youth. They provide encouragement, guidance on what is realistic, and assistance in breaking projects down into small and achievable steps. Role models are important for helping youth feel competent in taking action and believing that their actions will have an impact.

Roles of various organizations

Different entities and organizations, including schools, government agencies, community and nonprofit organizations, parks, museums and zoos, provide varying opportunities for environmental education.

Schools are a critical place for environmental education as youth identify school as the primary location where they learn about the environment, followed by the media, internet, books, and family and friends (Organisation for Economic Co-operation and Development, 2009). According to Kenney and Stromme (2008), schools and teachers can be effective at teaching environmental education by demonstrating an understanding of environmental stewardship, incorporating environmental education activities and lessons throughout various subject areas, teaching the complexity of systems in a holistic and balanced manner, and demonstrating the knowledge, skills, attitude and commitment that is at the core of environmental literacy.

Afterschool programs can be another important setting for environmental education because they can provide a great mix of activities that involve academics, hands-on projects, and interest-based learning (Afterschool Alliance, 2014). According to the Afterschool Alliance (2014), afterschool programs originally started to give youth a safe and supervised environment but have since expanded to focus on issues such as positive youth development, academic enrichment and connection to adult role models, all of which align well with the goals of environmental education. Youth who participate in afterschool programs show improved attendance, behavior and academic performance, but there is a large gap in Minnesota between interest in participating in afterschool programs and the programs' abilities to serve (Ignite Afterschool, 2016).

In addition to K – 12 schools and afterschool programs, early childhood and pre-school programs can be a critical time for environmental education as these programs work with youth at an important time in human development for shaping future habits in learning, health and behavior (NEEF, 2015). The primary goal of environmental education in early childhood programs is to foster a sense of wonder and appreciation for the natural world and develop respect for other living things. This establishes a foundation for developing attitudes, skills and commitment to protect the environment as children grow (NAAEE, 2010c).

Environmental organizations and local government agencies play an important role in environmental education as they commonly have funding, expertise and resources to support community efforts (Monroe & Krasney, 2015). The function of government agencies in supporting environmental education is varied and often includes building capacity for environmental education, offering networking and training opportunities, and providing or supporting programs (NEEAC, 2015). Government agencies play a role in addressing local and regional environmental issues, facilitating community awareness, engagement and participation, and modeling environmental behaviors (Kennedy & Stromme, 2008).

Nonprofit and community-based organizations commonly bring together people around a common cause, interest, service or activity (Kennedy & Stromme, 2008). These organizations often have the best understanding of local environmental issues and community concerns. They are increasingly embracing opportunities for collective impact by forming partnerships with funders, other nonprofit organizations and government entities (NEEAC, 2015).

Locations like parks, nature centers, zoos and museums offer outdoor and experiential learning environments where students can connect to and build awareness about the environment (Winther, Sadler & Saunders in Bodzin et al., 2010). Kenney and Stromme (2008) explain that environmental education efforts at these locations should be enjoyable yet meaningful, inclusive and accessible, customized for the specific audience, and framed as a community asset of high value.

Libraries have historically served an important cultural role of gathering, organizing and providing access to information while also promoting literacy. Libraries have had to reexamine and redefine their role in recent years as technology develops and changes. Although promoting literacy remains core to their mission, many libraries are moving toward a model of being more like a community center (Bentley, 2012). Libraries provide a good if surprising opportunity for environmental education because they already serve as community hubs, are located in most cities and neighborhoods, serve a wide variety of people, tend to be more flexible than schools, and are known as a safe place (Louv, 2015). Libraries have implemented sustainable practices in a variety of ways, including using green building and sustainable landscaping principles, providing access to information about environmental issues, offering environmental educational programming, and acting as a community hub for environmental organizations and working groups (Louv, 2015; Urban Libraries Council, 2010; Urban Libraries Council, 2011).

Businesses and corporations can commonly be overlooked as potential partners, but the private sector is becoming more engaged in environmental education as consumers, shareholders and corporate officers increasingly demand that companies adopt

sustainable practices. Environmental organizations have successfully partnered with corporations to promote environment-focused STEM projects, activities to protect land, and campaigns to raise awareness about environmental issues (NEEAC, 2015).

Roles in environmental education summary

Environmental education is commonly split into three sectors based on the formality of programming and connection to the audience. The types of organizations involved in environmental education can be wide-ranging and may include schools, early childhood education programs, afterschool programs, government agencies, nonprofit organizations, community and environmental organizations, gathering places like parks, nature centers, zoos, museums and libraries, and increasingly businesses and corporations. Understanding the resources provided by varying organizations is critical to forming partnerships and strengthening environmental education efforts. The next section will review common strategies and resources that are used to support environmental education along with best practices for each approach.

Environmental education strategies, resources and best practices

Various strategies have been developed to help organizations and entities plan and implement environmental education efforts. This section reviews the strategies and best practices for planning environmental education programs, developing partnerships, using and developing curriculum materials, offering professional development opportunities, and integrating sustainability and environmental education practices into buildings and grounds.

Program development and evaluation

Best practices for program planning. Effective environmental education programs are relevant to the missions of the organizations involved, complement existing programs, are based on identified needs of the organizations and community, align with pertinent standards and benchmarks, and account for community and organizational strengths. They are developed to meet the needs of the audience by being inclusive of diversity and being relevant to the learning objectives, interests and everyday lives of the participants. They are carried out by organizations that have the necessary capacity and involve stakeholders in all stages of the program. Evaluation strategies are considered early in the planning process, are used to determine strengths, successes, gaps and opportunities for improvements, capture the impact of the program, and are shared and disseminated with the necessary audiences. Plans for program sustainability, including long-term funding and partnerships, are considered (Athman & Monroe, 2015; Kennedy & Stromme, 2008; NAAEE, 2009).

Environmental education programs should be accurate, balanced, interdisciplinary, and inclusive of diverse viewpoints. They should use instructionally sound best practices in education and build the capacity of learners to prevent and address environmental issues by teaching them how to approach environmental issues rather than focusing on specific behaviors (Athman & Monroe, 2015; NAAEE, 2009). The most effective programs at increasing environmental concern and action occur over an extended period of time, let youth take personal ownership of the issues they are working on, allow youth to choose personally significant goals, and let youth experience successes in achieving those goals. Effective programs provide opportunities for direct experience, which may include learning about natural areas, practicing actions, or getting involved in local

government and their community. They also provide opportunities for youth to have discussions, collaboratively plan and problem-solve, and become role models of success for each other (Chawla & Cushing, 2007).

Environmental education within communities is most successful when it focuses on developing authentic relationships, fosters community leadership, and strengthens the community's capacity for improvement (Monroe & Krasney, 2015). Creating environmental education programs that are customized to the unique needs, interests and strengths of the audience and communities they are serving is important because environmental education can often be misperceived as focused only on improving the environment. Instead, environmental education needs to clearly establish that it can help reach multiple goals related to community wellbeing, economic development and environmental health (NEEF, 2015).

Developing partnerships. Partnerships are often critical to the success and expansion of environmental education programs. Monroe and Krasney (2015) say that partnerships strengthen program development, facilitation and communication, and Athman and Monroe (2001) explain that the strengths and advantages of partnerships typically outweigh the extra time and effort required. Peffer and Bodzin (2010) explain that programs where formal and nonformal educators work together can be mutually beneficial as formal educators can increase their knowledge of environmental issues and resources while nonformal educators can become more familiar with teaching strategies (Peffer & Bodzin in Bodzin et al., 2010). Additionally, NEEF (2015) suggests that developing partnerships with community-based organizations that have a connection to

and understanding of the audience is an effective way to reach multicultural and diverse audiences.

Partnerships in environmental education often involve schools, nonprofit organizations, universities and local government agencies (Monroe & Krasney, 2015). NEEAC (2015) suggests thinking more broadly to take advantage of interests from a wider range of groups, such as sports teams and celebrities. The roles of parents and families should also be considered as they play an important role in connecting children to nature, demonstrating pro-environmental behaviors, and supporting access to the outdoors. Partnerships and educators can help engage families by promoting nature-based activities and spaces that families have easy access to, increasing natural spaces for underserved populations, and encouraging parents to take an active role in environmental education programming (Monroe & Krasny, 2015).

Developing successful partnerships involves identifying the entities that need to be involved, selecting enthusiastic, willing and able representative from each entity, finding common goals, clarifying responsibilities and roles, and maintaining good communication (Athman & Monroe, 2001). Additional important elements of effective partnerships include establishing trusting relationships, creating equitable process and procedures, encouraging diverse membership, providing tangible benefits for all partners, and striking a balance between partnership process, activities and outcomes. Having significant community involvement, supportive organizational policies, leadership at multiple levels, appropriately skilled staff, collaborative dissemination of information, ongoing assessment of the partnership, a focus on continuous improvement, and sustainable impacts are also critical (Goodale, Hjarding, & Owens in Russ, 2015)

Community asset mapping can be an effective approach to assessing the best way to carry out a program within a specific community. This process inventories the strengths and resources within the community by taking into account the skills, experiences, interest and willingness of the audience to participate; the presence of organizations, clubs, and institutions; physical assets including buildings, land and infrastructure; and economic assets including local businesses and consumption habits (NEEF, 2015).

Curricula and activity guides

Providing environmental education curriculum that includes pertinent background information and is supported with professional development opportunities can develop competency in teachers and enhance their motivation to teach environmental issues (Stevenson et al., 2014). However, environmental education activity guides are not a perfect solution. Monroe and Krasney (2015) explain that environmental education activity guides have been criticized for being challenging because teachers lack time and training to integrate them appropriately and that general resources developed at a national level may not be appropriate for local settings and issues. Ledermann (2013) adds that the most effective and sustainable way to integrate environmental education may be to have teachers adapt lessons they are already using to include environmental topics and outdoor learning specific to their unique situation. Monroe and Krasney (2015) further explain that activity guides provide relatively easy access to environmental education, making them an effective way to get started on integrating environmental education, and additional training and support can help teachers make the necessary local connections.

Best practices for environmental education curricula. The NAAEE's best practices for the development of environmental education materials (2004) specify that these

materials should be fair and accurate, rely on facts, and take a balanced approach to presenting viewpoints, theories and opinions. Materials should reflect diversity and encourage openness to inquiry and alternative perspectives. They should also focus on unifying concepts in environmental and social science and give attention to varying scales of time and geography, with timespans ranging from short-term to long-term and impacts and communities including both local and global (NAAEE, 2004).

Materials should be action-oriented and emphasize building the skills and confidence that individuals need to make a difference in their lives and their communities. Materials should encourage effective instructional methods that are learner-centered, able to engage different learning styles, inclusive of a variety of learning environments, and interdisciplinary. Consideration should be given to elements of usability, including structure, design, lifespan, adaptability and accompaniment of the necessary resources, supplies and support (NAEE, 2004).

Integrating into standards and core subject areas. Integrating environmental education into standards-based curriculum is critical for schools to offer environmental education (Kennedy & Stromme, 2008; Simmons, 2014). Environmental education aligns well with both national and state standards for core subject areas including science, math, English, language arts and reading, social studies, and art.

Understanding how environmental education aligns with science standards is especially important because although environmental education is interdisciplinary and can be integrated throughout subject areas, it may realistically continue to be delegated to the realm of science education. The integrated and interdisciplinary approach to environmental education makes it a good fit with the approach of the national Next

Generation Science Standards, which were passed in 2013 (Carter & Simmons in Bodzin et al., 2010; NEEAC, 2015). Specifically, the concepts of questioning and developing analysis and interpretation skills represent strong connections between environmental education and the science standards (Simmons, 2014). The Minnesota Academic Standards in Science, last revised in 2009, focus on ensuring that students are scientifically literate. As defined in the standards, scientific literacy is similar to environmental literacy in that it is focused on developing skills of understanding and using scientific principles and processes to make decisions and participate in discussions about scientific issues that impact society (Minnesota Department of Education, 2009)

Environmental education also provides a compelling context for teaching STEM education, which has been an increasing focus in schools, as it focuses on real-world challenges and hands-on and project-based learning opportunities (Carter & Simmons in Bodzin et al., 2010; NEEF, 2015). Both the national and state standards for math emphasize the importance of teaching math in the context of solving problems and understanding relationships, which lends itself well to using environmental issues for context (Kentucky Department of Education, 2012a; Minnesota Department of Education, 2007).

Considering how to integrate environmental education into core subject areas of language arts, social studies and arts is important because science and STEM education do not address certain elements important to environmental literacy, especially decision-making, citizenship, personal and civic responsibility, and a sense of wonder (Simmons, 2014; van Boeckel, 2009). Social studies standards focus on the topics of citizenship and government, economics, geography and history. Elements of national and state standards

for social studies that align well with environmental education include the development of questioning, analysis and interpretation skills, understanding interactions among systems, knowing what actions are needed for effective citizenship participation, and being able to effectively communicate issues and take informed action (Minnesota Department of Education, 2011; Simmons, 2015). The national and state standards for language arts and reading include a focus on the development of critical thinking, analysis and synthesis skills so that students can critically evaluate sources of information and understand their own and other perspectives. The standards encourage inquiry-based and self-directed learning in which students are able to ask questions and seek information to answer them. These elements align well with the principles of environmental education (Minnesota Department of Education, 2010; Kentucky Department of Education, 2012b). The Minnesota Academic Standards for the Arts include benchmarks for artistic literacy that including creating, performing, presenting and critiquing. These benchmarks can be implemented through dance, media arts, music, theater or visual arts, and teachers are encouraged to integrate art into different subject areas (Minnesota Department of Education, 2008). Art activities can be a useful way to reconnect youth with nature and help them cope with environmental issues because they are inherently experiential and investigative, tend to activate senses and emotions, evoke creativity, encourage openness and sensitivity, and give youth an outlet to articulate and share their experiences (van Boeckel, 2009).

Environmental literacy scope and sequence guides, such as the *Minnesota Environmental Literacy Scope and Sequence*, can help curriculum planners and teachers identify opportunities to integrate environmental education into core subject areas. The

Minnesota plan includes benchmarks that define what students need to know in order to become environmentally literate. The scope and sequence builds on what students have learned previously and prepares them for what they will learn later, enabling teachers and program planners to develop coordinated programs (Landers et al., 2002).

Existing environmental education curricula. Numerous curriculum resources exist that are aligned with national and state standards, integrate environmental education into core subject areas, and use diverse teaching methods.

The most commonly referenced environmental education curricula are Project Learning Tree, Project WILD and Project WET. Instead of fitting the standard definition of curriculum, these resources are more thematic programs that provide educator training and activity guides for integrating environmental education into existing curriculum. All of these resources, developed in the late 1970s and early 1980s, include activities that aim to increase awareness, enhance creativity and critical-thinking skills, and develop abilities to make informed decisions. They each use a different environmental issue that students tend to be naturally interested in as a context for learning. Project Learning Tree focuses on forests, Project WILD focuses on wildlife, and Project WET focuses on water. These curricula provide a consistent approach to environmental education, have all been extensively field tested and evaluated, and are all disseminated through professional development workshops (Winther et al. in Bodzin et al., 2010).

Additional environmental education curriculum resources include the 4-H Environmental Education Program, Climate Generation curriculum guides, Do the Rot Thing, Leopold Education Project: Lessons in Land Ethic, Project Flying Wild, Project Food, Land and People, Think Earth, and Tree People. Some of these are offered for free

while others require professional development training to access resources (Hennepin County, 2017; Carter & Simmons in Bodzin et al., 2010). Hennepin County also offers activity guides that provide local information and activities related to recycling, waste reduction, hazardous waste, protecting land and water, and air quality, energy and climate change (Hennepin County, n.d.). There are several searchable online guides for environmental education curricula, including Minnesota's SEEK and the NAAEE websites (NAAEE, n.d.; SEEK, n.d.).

Professional development, networking, resource sharing

Professional development is one of the most commonly identified and immediate needs for environmental educators (Fleming, 2009). In order to teach about the environment, educators need many of the same things that their students need, including knowledge about natural and social sciences, understanding of interdisciplinary issues, familiarity with the resources available, understanding of local settings and issues, positive experiences in nature, pro-environmental attitudes, skills in teaching techniques and cultural competence, and a supportive network (O'Dowd et. al. in Russ, 2015). Training opportunities can help ensure that environmental educators have the knowledge and skills to be environmentally literate, which includes a working knowledge of the content they are teaching, the ability to develop questions, analyze and interpret information, an understanding of relationships among systems, and a feeling of personal commitment and civic responsibility (NAAEE, 2010b). Another aim of professional development opportunities is to help more people see themselves as environmental educators and understand the role they play in environmental education. Training can

also elevate environmental education in school systems by expanding the capacity of teachers to offer environmental education (NEEAC, 2015).

Professional development topics. Environmental educators have identified a wide range of topics that professional development efforts should cover. Educators need to develop cultural competencies and learn how to better engage increasingly diverse audiences. They also need to continually increase their knowledge about environmental issues, especially emerging issues such as sustainability and climate change, and how to put those issues into the context of culture, communities and health (Fleming, 2009; Ledermann, 2013).

Strategies for integrating environmental education into the formal school system, especially into subject areas beyond science, and developing standards-based curriculum is another identified need (Fleming, 2009). The pace of technology development makes it challenging for educators to maintain relevancy and use tools effectively. Training in technology tools and opportunities to learn how to integrate technology would help overcome many challenges that educators face, including thinking that integrating technology requires more planning and that they lack skills regarding technology (Peffer et al., 2013; Shmulenson et. al. in Russ, 2015). Additional topics of interest include managing students when teaching outdoors, using inquiry-based approaches, and working with teams of teachers on interdisciplinary approaches (Fleming, 2009; Ledermann, 2013).

Environmental educators often do not have good access to the latest research, which means that best practices and techniques are not being effectively applied in the field. Training focused on the latest updates from research would help educators use best

practices and innovative ideas for motivating behavior change, connecting people to nature, promoting action and citizen participation, using technology, and employing effective teaching strategies. Educators also need training in how to apply the NAAEE's guidelines for excellence and plan effective programs, including conducting needs assessments, developing objectives, integrating evaluation, and building partnerships (Fleming, 2009; NEEAC, 2015; NEEF, 2015).

Finally, educators want opportunities to feel renewed and motivated through networking, sharing success and best practices, and creating partnerships (Fleming, 2009).

Professional development delivery. Fleming (2009) found that environmental educators prefer professional development opportunities that are in-person, full day, focused on a limited theme, concentrated on issues at the regional or local level, and offered in the winter. They are also interested in fieldwork with natural and social scientists. Ledermann (2013) adds that offering one- or multi-day workshops for teachers can increase their knowledge, skills and confidence in offering environmental and outdoor education. Effective training methods may include engaging educators in hands-on activities similar to those they would carry out with youth, connecting teachers to experts in the field, and arranging site visits to environmental facilities and learning sites (Brown, Votaw & Tretter in Bodzin et. al, 2010). Providing time for teachers to plan projects and adapt lessons to include environmental education is another critical need (Ledermann, 2013).

Beyond one- or multi-day workshops, additional professional development resources can include developing and disseminating resources for educators, offering ongoing

series of workshops and learning opportunities, increasing communications among environmental education partners, and providing one-on-one assistance (SEEK, 2015).

Green buildings and grounds

Greening schools and schoolyards is a way to achieve multiple goals of leading by example, reducing environmental impacts, saving on operating costs, improving the health and wellness of students, connecting youth to the outdoors, and providing hands-on, real-world opportunities for students to learn about sustainability (NEEAC, 2015). Projects to green schools may include installing energy and water saving equipment, investing in renewable energy projects, installing rain gardens and other landscaping features, and encouraging students and staff to change their behaviors to conserve energy, save water, and increase recycling (Ledermann, 2013). Additionally, green schoolyards can be an effective way to provide opportunities for students to explore science topics in context, develop awareness of their local environment, gain experiences in the outdoors, and foster concern for the environment (Winther et al. in Bodzin et al., 2010).

Several program exist to support schools in taking steps to go green. The U.S. Green Building Council's Green Ribbon Schools program recognizes schools that have reduced their environmental impact and costs, improved health and wellness, and provided environmental education (NEEAC, 2015). Additional programs that support schools include the National Wildlife Federation's Eco Schools program and Project Learning Tree's GreenSchools! program (NEEF, 2015).

Beyond schools, many different types of buildings or grounds can implement sustainable practices and green building efforts to be used for environmental education. For example, libraries have implemented a variety of green building measures that could

be used to educate their visitors, such as installing energy and water efficient devices, operating buildings in an energy efficient manner, using sustainable building materials, using renewable energy such as solar and geothermal, and following green building maintenance practices such as recycling, waste reduction and energy efficiency. Examples of sustainable landscaping practices installed at libraries include hosting community gardens, installing practices that slow the flow of stormwater such as rain gardens, tree trenches, bioswales, and cisterns, and planting native vegetation that is suited to the local climate or native wildlife (Louv, 2015; Urban Libraries Council, 2010; Urban Libraries Council, 2011). These green building and sustainable landscaping practices could be adapted to a variety of settings to both protect the environment and provide a context for environmental education.

Strategies, resources and best practices summary

A variety of strategies can be used to develop and implement environmental education. Effective environmental education programs align with the organization's mission, goals and current efforts, often involve forming partnerships, and can use numerous educational strategies that are hands-on and relevant to the participants' lives. Environmental education curricula and activity guides can be an easy way for educators to begin to integrate environmental education, and many resources to incorporate environmental education into existing standards and requirements already exist. Professional development is one of the most frequently cited needs for advancing the field of environmental education, and educators are interested in a wide array of topics. Finally, making environmental improvements to the infrastructure where education is taking place, including the buildings and grounds, can be an effective way to protect the

environment, lead by example, and provide opportunities for real-world and hands-on learning. Although there are many benefits of environmental education and a lot of information and good resources are available to support the development of environmental education, educators and organizations face many challenges to integrating environmental education. The next section will consider the common benefits of and barriers to environmental education.

Environmental education benefits and barriers

Environmental education has wide-ranging benefits, including increasing youth engagement, motivating actions that protect the environment, fostering civic responsibility, and preparing youth to address real-world problems. Environmental education can also reinvigorate educators' interest in their profession, improve community wellbeing, and lead to increased environmental protection.

Despite the benefits, environmental education has not been consistently integrated into lessons and programming offered at schools and community organizations. Common barriers include the confusing identity of environmental education, lack of educator time, skill, knowledge and confidence, competing standards and requirements, limitations and challenges presented by participants, and lack of leadership support and funding.

Understanding both the benefits of and barriers to environmental education is critical to developing effective strategies and working with organizations to integrate environmental education.

Benefits of environmental education

Benefits for learners and educators. Environmental education's use of diverse learning activities that are learner-centered, connected to the real world, and focused on

problem solving have many benefits for learners and educators. These include generating more enthusiasm for and engagement in learning, enhancing student pride and ownership in their work, improving higher-level thinking skills, developing abilities to make connections across disciplines, and fostering independence and responsibility. Environmental education has also been found to improve performance in core subject areas, boost scores on standardized tests, and decrease discipline and attendance issues (Archie, 2003; Glenn, 2000; Lieberman & Hoody, 1998).

Significant gains in knowledge about environmental issues are an important and proven benefit of environmental education, but the value of environmental education goes well beyond learning. Youth participating in environmental education develop emotional and social skills such as self-esteem, character, teamwork, collaboration and leadership. They also develop 21st century academic skills, increase interest in civic engagement, feel empowered to make a difference, and are more likely to choose environmentally friendly behaviors (eeWorks, n.d.). When asked about the most important outcomes of environmental education, West (2015) found that youth participants focused on personal and social benefits as well as increasing knowledge about the environment and learning new skills.

Using diverse learning activities that are hands-on, cooperative, conducted outdoors or in the community, and connected to real-world issues helps students understand why they are learning different topics, engages a variety of learning styles, and encourages student ownership in their work, all of which increases student engagement (Archie, 2003; Ledermann, 2010). Youth enjoy participating in environmental education activities, and this fun factor enhances motivation for learning (eeWorks, n.d.). Taking a problem-

solving approach that requires creative and critical thinking provides opportunities for learners to develop and use a variety of skills and knowledge. These include asking thought-provoking questions, collecting, synthesizing and analyzing data and information, learning about the roles and responsibilities of various agencies and organizations in the community, thinking strategically, presenting information and arguments, and identifying solutions to complex issues (Lieberman & Hoody, 1998; NAAEE, 2010a). Being learner-centered – meaning that students select the topics they study and the method they use to study them while teachers guide them through the process – can help students develop a deeper interest in what they are learning and enhance their motivation and attention (Glenn, 2000; Lieberman & Hoody, 1998). This can also improve behavior because students who are more active participants in their learning gain more respect for their teachers and school (Glenn, 2000). Furthermore, projects that are focused on addressing issues in the community can give students greater pride and ownership of their work as they feel empowered to make a difference in their school and community and often gain recognition for their efforts (Lieberman & Hoody, 1998).

Environmental education has been shown to improve student achievement in individual core subject areas while also helping to increase understanding in the connections across subject areas. Lieberman and Hoody (1998) explain that students become more engaged in reading and writing when they are studying topics they choose and are interested in. They also become excited about sharing what they learned with others, increasing their confidence and skills in public speaking. Additionally, environmental education can make math less abstract because it can help students

understand how it can be applied in the real world. In social studies, using environmental issues helps students better understand the complex relationship between individuals, the community and the environment and provides context for the significance of history, geography and politics. When studying environmental issues in science, students improve their knowledge and skills, gain a deeper understanding of scientific concepts and processes, have more interest in and excitement about studying science, and better understand how to apply scientific knowledge to making decisions in the real world (Lieberman & Hoody, 1998). Glenn (2000) explains that using environmental issues for science can help students go beyond learning about science and help them understand how to do science. In addition to improving performance in individual subject areas, the interdisciplinary approach of environmental education builds an understanding of how systems are connected and interact in the world, and using collaborative instruction gives students different perspectives on various issues and subject areas (Lieberman & Hoody, 1998).

Environmental education can also improve the quality of instruction and teacher engagement. Using a learner-centered approach helps teaches pay closer attention to the individual skills, knowledge and abilities of their students. Additionally, teaching about the environment through a collaborative and interdisciplinary approach can revitalize teachers' enthusiasm as they approach subject and lessons in new ways, have opportunities to learn about new topics and teaching methods, and see students become enthusiastically engaged (Lieberman & Hoody, 1998). When asked about the most important outcomes of environmental education, West (2015) found that educators focused primarily on participants' increasing knowledge of the environment.

Benefits for the community. Effective environmental education goes beyond increasing knowledge about environmental issues and aims to prepare students to engage in civic processes and take an active role in their communities. EECapacity (2016) explains that this is beneficial for the community because community wellbeing is correlated with environmental health. For example, trees in urban areas help reduce crime, enhance economic development, reduce asthma and promote mental health, and neighborhoods with community gardens are less violent and have more positive social interactions among residents (EECapacity, 2016).

In addition to having a direct, positive impact in the community, community-based learning makes students feel more connected, improves critical-thinking and problem-solving skills, and develops maturity, confidence and leadership. It helps students learn how to work collaboratively, increasing understanding of the world they live in, and builds awareness of diverse viewpoints (Glenn, 2000; Monroe & Krasney, 2015; NEEF, 2015).

Environmental education also helps youth develop skills that prepare them to live and work in the 21st century, especially in a world with more complex relationships between natural and social systems and a workforce that increasingly values sustainability and green jobs (Glenn, 2000; NAAEE, 2010a). According to NAAEE (2010a), leaders in business, education and policy identified many important skills for the 21st century that environmental education helps to develop. These include global awareness, literacy in economics, civics, health and environment, creative and critical thinking, problem solving, collaboration, and media literacy.

Benefits for the environment. Finally, environmental education is beneficial for the environment because youth who feel connected to nature are more likely to develop positive attitudes and behaviors toward the environment. Ledermann (2013) found that students who participated in outdoor and environmental learning had increased environmental sensitivity, a better understanding of ecological systems, increased positive attitudes toward the environment, and an increased intention to act. Monroe and Krasney (2015) found that a positive connection to nature increases interest in participating in future nature-based activities, develops a sense of empathy for other creatures, and establishes a sense of oneness and personal responsibility. Additionally, NEEAC (2015) and NEEF (2015) explain that positive experiences in nature in childhood can enhance pro-environmental attitudes and behaviors as adults and make people more likely to purse an environmental career.

Barriers to environmental education

Environmental education identity. Environmental education is a broad field that integrates information, topics and teaching strategies from multiple disciplines. Establishing the identity for environmental education and figuring out how to integrate the interdisciplinary field into the discipline-specific school system can create both barriers and opportunities. The flexibility of environmental education can be advantageous as it can be adapted to fit many issues, contexts and settings. However, the broad and holistic focus of environmental education can make the field hard to define, easy to omit from education all together, and confusing in figuring out how to apply it (Peffer & Bodzin in Bodzin et al., 2010; Monroe & Krasney, 2015). Additionally, the

lack of national data on environmental education in the U.S. because it is decentralized makes communicating impacts on a large scale challenging (Feinstein, 2009).

Environmental education can be especially challenging to integrate into the school system as it is a non-standardized field that does not necessarily align well with the approach of teaching subjects in isolation that is common in schools. The subject-specific approach to education often means that environmental education is relegated to science only, which can lead to the social and political aspects of environmental education being ignored (NEEAC, 2015). Landers et al. (2002) explain that clearly defining the core knowledge that learners need in order to develop environmental literacy and creating step-by-step guidelines for integrating environmental education throughout subject areas can help address these barriers.

Barriers for educators. Educators, especially in school settings, have identified many barriers to teaching environmental education. Some of the most common barriers include lack of time and interest, competing requirements and priorities, access to curriculum and resources, lack of training and professional development opportunities, and inadequate funding. Considering there are many identified barriers, understanding what the greatest barriers are and how much these barriers are real versus perceived is important to developing and prioritizing solutions (Peffer & Bodzin in Bodzin et al., 2010; Ledermann, 2010; NAAEE, 2014; Stevenson et al., 2014).

Several studies have found that lack of time due to the requirements of standards and testing are the highest barriers to teachers offering environmental education (Ledermann, 2010; Stevenson et al., 2014) The pressures of standardized testing limits teachers' time because they need to focus more on the tested subjects of math and reading. Most

teachers think environmental education fits mostly into science education, which tends to get less time and attention than other subjects (Stevenson et al., 2014). For example, the Center on Education Policy (2008) found that between 2002 and 2007, elementary schools had increased the time spent on reading and math by 43 percent while reducing time on other subjects including social studies and science by 32 percent. The stricter focus on testing as well as decreasing flexibility in older grades may lead to less time for environmental education. Archie (2001) explains that elementary teachers are more likely to integrate environmental education than middle school and high school teachers.

Several researchers have found that more time would likely lead to more effective and sustainable programs. For example, Ledermann (2013), who led a project that gave grants for environmental education to schools, found the biggest challenge to be connecting with the teachers who were receiving grants because they were pressed for time and had many competing priorities. The short duration of the project made it difficult to develop a relationship with the schools, an issue that could be addressed by focusing on developing long-term projects and partnerships.

Stevenson et al. (2014) explain that the barriers of time, resources and testing requirements are unlikely to change, making it necessary to develop strategies to address those barriers. Strategies they identify include framing environmental education as a context for learning in all subjects instead of a separate subject to cover and offering information and training on how to integrate environmental education into reading, math and language arts. This was the approach of the successful Environment as an Integrating Context concept developed and implemented by Lieberman and Hoody in the 1990s (Lieberman & Hoody, 1998).

Another commonly cited barrier to environmental education is lack of educator knowledge and confidence in teaching environmental and science topics (Peffer & Bodzin in Bodzin et al., 2010; NEEF, 2015). Teachers are more likely to integrate environmental education when they have high environmental knowledge, sensitivity, literacy and skills (Ernst, 2012). But Feinstein (2009) explains that teachers reflect the general public in that they are concerned about environmental issues and hold positive attitudes toward pro-environmental behaviors but do not know a lot about specific environmental issues. And few teachers have training in environmental issues or teaching methods (Archie, 2001). However, some researchers have found that lack of educator knowledge in environmental education may be more of a perception than reality. Landers et al. (2002) explain that teacher knowledge of environmental education topics and methodology has improved, but that guidance in how to integrate environmental education into standards-based curriculum is needed. Stevenson et al. (2014) found that teachers actually had high levels of ecological knowledge but thought that they did not know enough about these issues to effectively teach them. The researchers suggested that offering training in specific environmental issues, such as climate change and biodiversity loss, may help build educators' confidence in teaching those issues.

Educators also face barriers in integrating common environmental education pedagogies such as outdoor education and service learning. Bloom, Holden, Sawey and Weinburgh in Bodzin et al. (2010) found that barriers to teaching outside fell into three main categories: logistical barriers such as time, transportation, chaperones, permission to leave the school, and liability; geographical barriers such as lack of suitable outdoor spaces or lack of necessary facilities at outdoor spaces; and lack of administrative

support. The perceived location of where outdoor education should take place can be a barrier as some teachers think that outdoor learning had to take place at a more natural location far from school whereas others saw the value in conducting shorter outdoor lessons on the school grounds. Additionally, elementary teachers tend to use the outdoors more because they often have more flexibility and are teaching science concepts that are more concrete whereas secondary teachers felt they had less flexibility and opportunity to teach outside because of standards and more abstract science concepts. Teachers that did use the outdoors for learning cited benefits such as student enjoyment, increased student understanding and connection to science concepts, and opportunity to provide experiential learning (Bloom et al. in Bodzin et al., 2010). In addition to challenges with outdoor learning, the use of service and community-based learning in schools has declined in recent years (NEEF, 2008). NEEF (2015) suggests that service learning, similar to environmental education as a whole, faces challenges of reduced funding and expanded standards and testing requirements.

Lack of training and educational opportunities can serve as barriers to becoming an environmental educator. There are limited pre-service training programs for teachers that focus on environmental education topics and teaching strategies, and there are few formalized ways to enter into the environmental education profession as a whole. Additionally, environmental education programs are difficult to sustain because of fluctuating funding support at both the state and national level. Although there are some good training opportunities available, training for environmental education professionals and teachers is rarely standardized. This can lead to the environmental education field appearing disjointed and lend to the perception among educators that they lack the

knowledge and confidence to teach environmental education topics (Archie, 2001; NEEAC, 2015; NEEF, 2015).

Despite the barriers, teachers express interest in increasing how much they teach about the environment. This is especially true for teachers with positive environmental attitudes, high environmental literacy, and personal interest in environmental education. Expanding opportunities for training and professional development could help capitalize on the interest of teachers for expanding environmental education (Bloom et al. in Bodzin et al., 2010; Stevenson et al., 2014).

Barriers presented by participants. In addition to barriers faced by educators, those trying to teach environmental education may face various limitations, barriers and challenges presented by the participants or learners. Common challenges faced by environmental educators includes that participants are not interested in the environment and outdoors, lack understanding of ecosystems, or have many competing interests and responsibilities such as entertainment and leisure activities, work, school and afterschool activities (Byron in Russ, 2015; Withrow-Clark, Siddal & Kemsley in Russ, 2015).

Although people say they value time spent outdoors – with 92 percent of Americans saying they believe that kids should spend more time outdoors – there are many barriers to outdoor exploration (The Nature Conservancy, 2011). Clements (2004) found that children today spend far less time playing outside than their parents, and the types of outdoor play activities they engage in have changed. Children today participate more in organized sports and less in imaginative free play or self-regulated games. These changes may mean that children are growing up to be less creative, self-reliant and independent (Clements, 2004). The expansion of technology has had an especially important impact

on the amount of time youth spend outdoors. Parents report that time spent watching TV and playing computer or video games are the primary barriers to children spending time outside (Clements, 2004). The Nature Conservancy (2011) found that the majority of youth spend time online, playing video games or watching TV daily, while fewer than 40 percent of youth participate in outdoor activities like hiking, fishing, hunting or visiting a park or natural area on a weekly basis Additional barriers to spending time outdoors include lack of natural spaces nearby, difficulty in getting to natural areas that are farther away, health and safety concerns, lack of interest, feelings of discomfort, lack of time for parents to spend outside with their children, limitations for children with physical disabilities, and a perception that parents do not want children to get dirty (Clements, 2004; NAAEE, 2010c; NEEAC, 2015; NEEF, 2008; The Nature Conservancy, 2011). Youth, especially those living in urban areas or those that spend a lot of time indoors, may be disconnected from nature, think natural spaces are boring or irrelevant to their lives, or may not believe there is a lot they can do to protect the environment (Byron in Russ, 2015; Withrow-Clark et al. in Russ, 2015)

Another challenge can be the participants' knowledge of environmental issues. The Minnesota Environmental Literacy Report Card (2008) found that only 43 percent of Minnesotans have above-average knowledge about environmental issues (Murphy & Olson, 2008). NEEAC (2015) has found that the public's basic understanding of science concepts and processes are declining and that there is a disconnect between the availability of information and people's ability to use that information in a constructive way to make decisions. Additionally, gaining information does not necessarily mean than individuals are more likely to act. The National Environmental Literacy Project (McBeth

& Volk, 2009), which studied environmental literacy and behaviors for 6th and 8th grade students, found that 8th graders had more knowledge about environmental issues but 6th graders rated higher on environmental behaviors.

Leadership support and funding. Because environmental education is often not required, educators and organizations often only teach it if they are interested (Landers et al., 2002). This makes leadership, administrative and policy support critical to supporting and expanding environmental education efforts.

Ledermann (2013) called administrative support the most important factor in schools comprehensively integrating environmental education and green school initiatives. This is because strong leadership support sends a clear message to all stakeholders that environmental education is a priority and makes it easier for teachers to access the needed support and resources. Ernst (2012) found that administrators perceive lack of time, interest and comfort in teaching environmental issues as barriers.

Administrators that support environmental education efforts often have positive environmental attitudes, have strong personal commitment to environmental literacy, and cited the benefits of environmental education for increasing enrollment, gaining recognition in their communities and increasing student achievement and engagement (Ernst, 2012; Ledermann, 2010). Providing opportunities for administrators to participate in environmental education projects, increasing environmental literacy among leaders, and informing leaders about the value and benefits of environmental education can build leadership support (Athman & Monroe, 2001; Ernst, 2012).

Although environmental education has been proven to increase environmental literacy and be beneficial to learners, environmental education is often ignored or downplayed in

both environmental and education policy and not fully funded (Monroe & Krasney, 2015; NEEAC, 2015). One issue is that environmental education does not always align well with established funding programs. In environmentally focused funding programs, environmental education is often funded as part of larger environmental initiatives focused on a specific issue, which can cause education to be downplayed or make it difficult to account specifically for education efforts. Meanwhile, education-focused funding programs often emphasize professional development and improving basic or overall education initiatives instead of being allocated to a specific subject or topic area (NEEF, 2015).

Funding for environmental education has remained stagnant at only 4 to 5 percent of overall funding for environmental initiatives (NEEF, 2015). Government agencies at the local, state and federal level provide most of the funding for environmental education. Individual environmental education programs typically pursue multiple funding streams, which may include support from foundations, corporations, agencies, individual donors, and program fees (NEEF, 2015). One funding source for environmental education is through the U.S. EPA, which provided $2.1 million in environmental education grants to local, regional and state agencies and organizations in 2011. Although this amount is not insignificant, it is only a fraction of the $1.8 billion in total grants funding the EPA awarded in 2011 (NEEF, 2015). The corporate sector is one area where funding for environmental education has increased (NEEF, 2015).

Ledermann (2013) suggests that small grants of $5,000 to $10,000 to educators provided at the local or state level could go a long way in expanding environmental and outdoor education as educators frequently identify lack of resources as a barrier to

environmental education. Funding is commonly used to purchase supplies and equipment, allocate time to adapt and improve lesson plans, cover transportation costs, and support activities that get students outside.

Benefits and barriers summary

By engaging learners in real-world issues in their community and providing learning opportunities in a variety of contexts and settings, environmental education has many benefits including increasing student engagement and achievement, improving the community, and protecting the environment. Despite the benefits, educators face many barriers to incorporating environmental education. These may include difficulty defining and understanding all of the possibilities for integrating environmental education, real or perceived lack of time, knowledge and skills, competing priorities and requirements, and challenges acquiring the necessary leadership support, resources, and funding. Helping educators and leadership understand the benefits of environmental education and the opportunities to integrate it across subject areas as well as identifying and addressing barriers is critical for expanding environmental education.

Summary

Despite a solid foundation established internationally in the 1970s, environmental education can be a difficult field to fully define, understand, and elevate to the necessary realm of importance with educators, administrators, policy leaders and funders.

Being a broad, interdisciplinary field allows environmental education to be incorporated into a wide variety of existing programs and efforts. Environmental education's focus on real-world issues, problem-solving, systems-thinking, and personal and community action has wide-ranging benefits. Additionally, many high-quality

resources and best-practices guidelines are available to help carry out effective environmental education programs.

However, many barriers and challenges exist that prevent the integration and expansion of environmental education. Like the benefits of environmental education, these barriers are similarly wide-ranging. They include making environmental education relevant to an increasingly urban and diverse population, grappling with complex and immense environmental issues, figuring out how to integrate an interdisciplinary field into core subject areas focused on specific topics and limited by standards and testing requirements, enhancing educator interest and confidence in incorporating environmental education, and increasing support and funding.

Despite the barriers, the field of environmental education is continually seeking to expand, adapt and formalize, and there is high interest among many educators and organizations in providing education about environmental issues.

The next chapter outlines the plan for holding group conversations and conducting questionnaires and surveys with educators and organizations to answer the research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth?

CHAPTER THREE

Methods

As established in chapter two, partnerships are a key strategy for environmental education. This led to the development of the research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth?

Answering the question involves understanding how partners define environmental education and how it aligns with their organization's mission, goals and activities. Knowing what partners perceive to be the benefits of and barriers to environmental education is also important. Finally, it is necessary to learn what resources they need and what strategies would be effective in addressing their barriers.

This chapter will describe why and how the action research methodology was used to answer the research question. An overview of the methods used to gather data, the setting and participants involved, the way that data was analyzed, and how ethical considerations were addressed is also included.

Research paradigm

This project used the action research methodology, which is a process to gather insights into how an organization or institution operates, examine the interactions and relationships of social systems and processes, and seek improvements (Riel, 2016; Mills, 2014). In this methodology, research is conducted by the educator or practitioner to reflect upon and improve their work in collaboration with their colleagues, partners or audience. Recognizing that their views are subjective, researchers in action research

projects seek multiple perspectives in order to understand and identify improvements (Riel, 2016; Mills, 2014). The goal of action research is to develop a self-reflective practice focused on continuous learning and improvement. Changes made as a result of action research may make processes more efficient or more innovative. Action research emphasizes being relevant to the work and situation of the researcher and their community over being universal and generalizable (Riel, 2016; Mills, 2014).

The action research methodology is applicable to this project because it is being conducted in my workplace and builds on assessment and evaluation work that has been done regarding our youth environmental education and outreach efforts. The initial assessment gave the team a better understanding of the effectiveness of the programs that we offer as well as identifying opportunities for improvements to individual programs. However, more information is needed about how partners view environmental education, why they would develop and offer environmental education programs, and what support is needed. This research approach will improve that understanding and help us be more strategic and systematic in forming partnerships, developing resources, and offering programs, training and support. The next section provides an overview of the research methods used to answer the research question.

Methods

A mix of research methods that focused on qualitative data were used to answer the research question. According to Mills (2014), the narrative and descriptive data collected through qualitative methods helps researchers understand situations and attitudes related to the research topic from the perspectives of the participants. Qualitative data was the focus of this project as the goal of the research was to understand how partners view

environmental education and what resources and support they need. The methods used to gather information was group conversations, an online questionnaire, and an online survey.

Group conversations

The World Café model. A series of group conversations were conducted to gather information about how partners define environmental education, how it fits into their organization, and what the opportunities are for additional partnerships and support. The group conversations used a World Café model, which is a conversation methodology designed to encourage open communication and sharing within a group and uncover collective knowledge and meaning around a particular topic. This approach is based on the idea that humans share and develop ideas and values through conversations, and that when people feel energized about what they are talking about they naturally start to organize and move toward action. The process involves arranging small group conversations in a café-style set up, which encourages relaxed and creative dialogues (Brown & Isaacs, 2005). According to the International Association for Public Participation (IAP2, 2014), World Cafés are useful for fostering open and meaningful discussions, gathering a lot of responses in a short amount of time, getting ideas from a diverse range of perspectives, and building community among participants.

Setting. The study was conducted in Hennepin County, the largest county by population in Minnesota (Minnesota Demographic Center, 2010). The county includes Minneapolis – the largest city in the state – and its surrounding suburbs. The county varies from urban to suburban to rural, resulting in a wide diversity of residents with varying lifestyles and interests. This presents both challenges and opportunities for

conducting environmental education throughout the county and makes creating partnership critical to success. The county has found developing partnerships to be an effective way to capitalize on the strengths of both the county and the partnering organizations. Hennepin County typically provides resources, funding and expertise in environmental issues while partners have a connection to and understanding of their specific audiences. The types of partner organizations include schools, libraries, nonprofit organizations, community groups, faith-based organizations, and other government agencies including watersheds, cities and park districts.

Meeting schedule and locations. To maximize participation, three conversations were scheduled in August and September 2016 at varying times and locations throughout the county. The initial three conversations included a morning, mid-afternoon and afternoon option. A fourth conversation was added in the evening after receiving requests to provide a time to accommodate teachers. Each conversation lasted 3.5 hours and was facilitated in the same way so that participants only needed to attend one conversation.

Locations were selected based on geography, access, and availability of a hospitable meeting space. Elements of a hospitable space that were considered included a large room with plenty of space to move around, natural lighting, and views of natural elements when possible. Meeting locations included libraries and a watershed organization meeting space.

Invitations. Former, current and potential future partners were invited to participate. A web page and RSVP form were set up to share information and track registrations for the conversations. A series of invitations and reminders were sent to a variety of email and mailing lists, including:

- Email invitations were sent to an email list of about 3,000 environmental education partners through one regular newsletter and three special announcements.
- Information was included in two editions of a regular monthly newsletter with about 3,700 subscribers interested in updates about environmental news and programs from the county.
- An email list of 80 potential partners at nonprofit organizations and schools were sent two announcements.
- Personal emails were sent by my colleagues involved in the project to their various contact lists, including environmental education grantees and contacts, school recycling contacts, and multicultural organizations.
- A postcard mailing was sent to about 580 contacts, including environmental education partners and potential partners in schools and youth-serving organizations.
- The conversations were promoted on the county's Facebook page with a total of seven weekly posts throughout August and September, reaching an average of 228 people per post.

Participants were asked to RSVP to a specific conversation to ensure adequate participation at each conversation. The World Café conversation schedule and sample invitations are included in Appendix A.

World Café design. The steps to designing a World Café as laid out by Brown and Isaacs (2005) were followed. The first step was to set the context by understanding the current situation and establishing a clear purpose for bringing people together. The

county's youth environmental education and outreach team had accomplished this by assessing our work and the work of our partners in the four years leading up to this project. About a year before this project, we held a networking meeting to update partners on our youth outreach efforts and next steps, which included conducting a broader assessment of environmental education in the county. The context for the group conversations were communicated in the invitations and during a brief introduction at each conversation.

At the conversations, a hospitable space was created by using small tables, creating an inviting table set up with checkered tablecloths, providing interactive ways to write and draw ideas, using posters of youth outreach programs to remind participants of our greater purpose, minimizing the use of technology, using hand-drawn posters for the welcome sign, agenda and questions, and providing food.

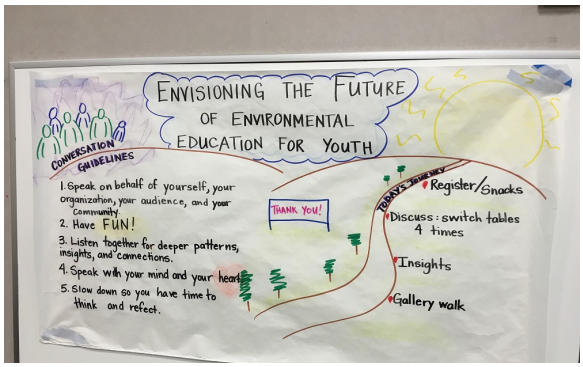


Figure 1: Hand-drawn posters were one way to reduce the use of technology and create an inviting space.

During the conversations, participants discussed each question in small groups of four or five people. The conversations posed open-ended and engaging questions and encouraged everyone's contributions by focusing on small group discussions as

Figure 2: Participants discussed each question in small groups of 4 or 5 people.

well as providing ways to write or draw ideas. The group conversations included four conversation rounds with each round focused on a different question. The questions were:

1. What is environmental education?
2. What are the benefits of environmental education?
3. What are the barriers to environmental education?
4. What strategies would be effective in addressing those barriers and enhancing or expanding environmental education efforts?

Each conversation round lasted 25 minutes. During each round, participants were given 20 minutes to have an open discussion on the question for that round and were asked to take notes of their conversations on postcards. During the last five minutes of each round, participants were asked to reflect on their conversation and identify the key insights and takeaways. They wrote these ideas on large post-it notes, which were collected at the end of each round, grouped by like ideas by staff, and posted to a gallery wall. This wrap-up to each discussion round encouraged reflection and intentionality by asking participants to consider their conversations and articulate their most important insights (Brown & Isaacs, 2005; IAP2, 2014; The World Café Community Foundation, 2015).

Participants were given a 5 to 10 minute break between each conversation round during which they were asked to switch tables and sit with a new group of people. Having participants switch tables encourages networking and connections, enables everyone to hear different perspectives, helps participants start to identify patterns and themes, and allows ideas to spread throughout the group (Brown & Isaacs, 2005; IAP2, 2014; The World Café Community Foundation, 2015).

Finally, participants had a chance to share collective discoveries during a final, large group wrap-up conversation about overall insights from the day. Participants were given about 10 minutes to view the gallery wall that included all of the key takeaways from each conversation round, and then staff briefly presented the wall to the entire group, explaining the various themes that had emerged. To wrap up the meeting, participants were then asked to reflect on the entire day and share their overall insights and key takeaways during the large group reflection and discussion (Brown & Isaacs, 2005; IAP2, 2014; The World Café Community Foundation, 2015).

Figure 3: Facilitation staff presented the themes that emerged among the key takeaways that were posted to the gallery wall before the final wrap-up conversation on overall insights.

For more information, a brief guide to planning and hosting World Café conversations from the World Café Community Foundation is included in Appendix B, and the facilitation guide for my World Café conversations is included in Appendix C.

The final conversation had only three participants, which was a much smaller group than the previous three conversations, requiring a change to the facilitation method. This

conversation was facilitated more like a focus group, which is a facilitated group interview about a specific topic that often brings together individuals with a common interest to discuss a set list of questions (IAP2, 2014; Mills, 2014). During the last conversation, all participants sat at one table and discussed the questions while the meeting facilitators took notes. Although focus groups do not provide the same opportunity as World Café conversations for bringing a large group of people together, they are still useful for establishing a shared understanding of the questions and responses (IAP2, 2014; Mills, 2014).

Online questionnaire. Prior to each conversation, participants were sent an online questionnaire to gather specific information about them and their organization. The questionnaire gathered information about the participant, the type of organization they are affiliated with, and their relationship to that organization. Information about the types of programs and services they offer, the audience they work with, whether or not they currently offer environmental education, how environmental education aligns with their organization's mission, and how important environmental education is to them, their organization, and their audience was also gathered. The questionnaire is included in Appendix D.

Survey

In addition to the group conversations, an online survey was distributed in to gather feedback on what partners thought were the most important goals and best practices of, benefits of, barriers to, and strategies for environmental education. The survey also gathered information about the importance of environmental education, the topics respondents were most likely to use to teach environmental education, and topics

respondents were most interested in learning more about. Mills (2014) explains that surveys allow researchers to collect a lot of data quickly, but may not offer as in-depth or as rich of data insights as other research methods. Surveys are also a way to get input from people who are unlikely or unable to participate otherwise, and they may get a better response rate than other forms of communications (IAP2, 2004).

Barriers, benefits, and professional development needs and strategies identified in the literature review were used to develop the survey and group conversation questions. Some of the questions in the survey were open-ended to gauge participants' feelings, attitudes, thoughts and perceptions while others used information from the literature review to assess relative importance and priorities of the literature review findings. The survey questions are included in Appendix E.

The survey was available for about 2.5 weeks in November 2016. The survey was sent to participants of the group conversations as well as the same lists of current, former and potential partners who received invites to the group conversations. An announcement about the survey and a reminder were sent via email to the 88 people who RSVP'd to the World Café style conversations. A link to the survey and a reminder was also sent to an environmental education partner email list with about 3,000 subscribers and to a list of about 80 potential partners.

Testing the methods

Mills (2014) explains that piloting questions can be an effective way to ensure that you are getting the data and information you really want in your research. The group conversation facilitation plan and questions were presented to my colleagues at the

county in order to gather feedback and make adjustments. The survey was also sent to several colleagues to test and gather feedback before being sent to partners.

Methods summary

Several methods were used to gather qualitative feedback from partners. These included a series of group conversations to engage partners in a discussion to uncover their experiences and collective wisdom regarding the definition of, benefits of, barriers to and strategies for environmental education. A pre-questionnaire was used to learn more about participants and their organizations and audiences. A survey was sent following the group conversations to help establish priorities and get wider participation. The next section will describe the participants in both the group conversations and the survey, including how many participated, who the participants are, how environmental education aligns with their organization's mission, and why they were interested in participating.

Participants

More than 180 people participated in this project either through the World Café style conversations or the online survey. Participants included staff or representatives from various environmental education partners or potential partners in the county. Existing partners include organizations and institutions that participate in or use the county's various environmental education programs and resources. Potential partners are organizations the county has identified as having target audiences and organizational goals and activities that align well with the county's environmental education efforts.

The following section describes how many people participated in each method and who the participants were in regards to the organization they represent, their role in that

organization and how long they have been in the field of environmental education. Information about the mission, goals, activities and audiences of the participants' organizations as well as how their work aligns with environmental education is also included.

Who participated

A total of 72 people participated in the World Café style conversations. The first three conversations, held during the workday, had an average of 23 participants at each. The final conversation, held in the evening, had three participants, requiring this session to be conducted more like a focus group.

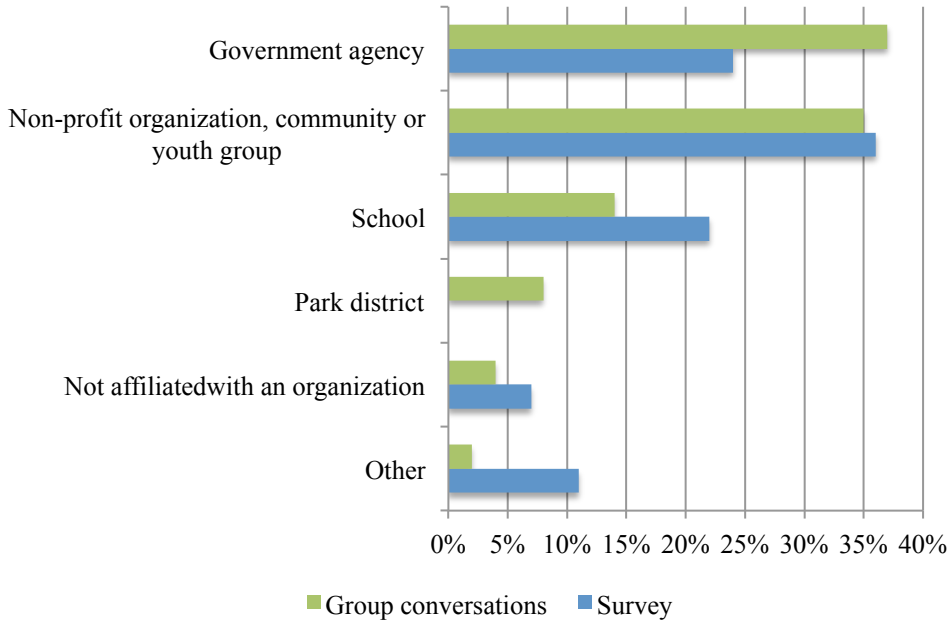
Participants were sent a questionnaire to complete before the conversation to gather more information about them and their organization. The questionnaire received 49 responses, which is a 68 percent response rate. For the group conversations, the following information about the participants and their organizations is based on the 49 questionnaire responses, while the summary in the results chapter of the discussions and themes is based on notes that the 72 participants took during the conversations.

The survey had 152 respondents. Most of those respondents (114) were those who clicked on the web link emailed out, and the remaining 39 received the email that was sent to the 88 people who submitted RSVPs to the conversations.

As shown in figure 4, the majority of participants in both the group conversations and survey were from government agencies, nonprofit organizations, youth and community groups, or schools. Fewer people represented park districts or were not affiliated with an organization. A higher percentage of participants in the group conversations represented government agencies compared to the survey, while the survey had more representation

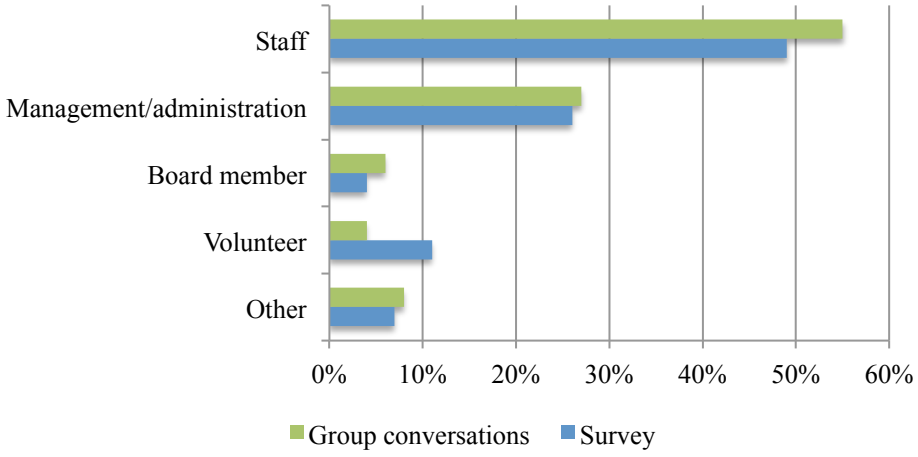
from schools. Those who selected "other" were independent consultants or represented businesses. The variety of organizations that the project participants represent reflects the diversity of people involved in the environmental education field as a whole as described in the literature review. The participants represent a variety of organization in the formal, nonformal, and informal sectors (Fleming, 2009; Monroe & Krasney, 2015).

Figure 4: Type of organization that participants represent



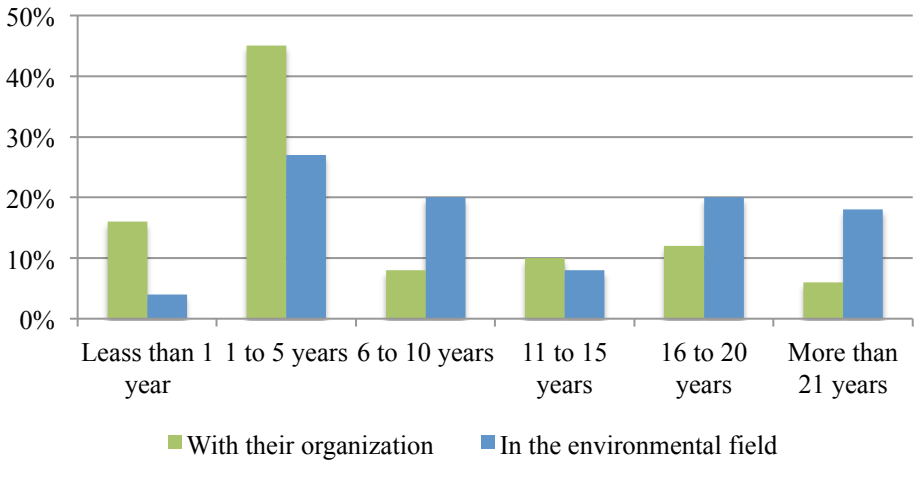
As shown in figure 5, most of the participants in the group conversations and survey were staff or management/administration. Fewer were board members or volunteers. Those who selected "other" include people who are independent consultants, concerned citizens, or retired.

Figure 5: Participants' role in their organization



The questionnaire for the group conversations asked about the participants' years of experience both with their organization and in the environmental education field. As shown in figure 6, most of the participants have been with their organization for one to five years, while the length of time they have been in the field was more wide ranging. This question was not asked in the survey.

Figure 6: Participants' years of experience



Organization mission, goals and activities

Participants in the group conversations were asked to describe their organization's mission and goals. The mission of each organization tended to align with multiple themes. Many of the organizations have a focus on education, which includes in schools, community groups, parks, watersheds, libraries and working in partnerships. Some focus areas include lifelong learning, engaging families, outdoor education, and school readiness. More than half of the organizations also have a mission focused on protecting the environment and promoting stewardship, including protecting and improving land, water, natural resources, habitats, rivers and watersheds. Organizations focus on a variety of environmental issues, including climate change, recycling and organics recycling, ecologically based landscapes, pollinator habitats, trees, and sustainability. The mission and goals of the participants' organizations also including building community and promoting partnerships; supporting youth leadership and development; promoting personal and community wellbeing; providing recreation opportunities; and offering employment and developing job skills. This question was not asked in the survey.

Both the group conversation participants and survey respondents were asked to briefly describe the primary audience they work with, including the general age, demographics, geographical location, and number of people. This was an open-ended response, so the information collected was inconsistent. Results were similar among the group conversation participants and survey respondents. Many participants indicated that they work with a wide range of ages from youth to adults. Others said they focus more specifically on preschool and elementary aged children, middle school, high school and young adults, or adults and families. Many participants focus their work in the metro

area, while others indicated they work statewide or in suburban areas, and a few said they focus primarily in an urban area or work out of state. Some participants indicated that they work with diverse audiences or new immigrant populations, but generally demographic information was not widely reported. Similarly, audience size was not widely reported, although several organizations indicated that they work with a large audience, pulling in the general public, while others focus on smaller audiences within their school, organization, or community.

Participants in the group conversations were asked to describe the types of activities and services that their organization offers. This question was open-ended, so the responses varied, and this question was not asked in the survey. Many participants said their organizations offer some sort of environmental education or science focused programming, while others said they offer recreation-based services, provide camps and field trips, facilitate career development or employment opportunities, or conduct outreach at community events. Some of the organizations focus on environmental protection and restoration, while others offer grants, conduct fundraising campaigns, or participate in advocacy efforts. For many organizations, these activities are offered for youth and school groups while others said they focus on the public more generally and a few focus on educating families. Much of the programming offered is more short-term; although some organizations offer more long-term programs and a few offer both short- and long-term programs.

Alignment with environmental education

Most of the participants (82 percent in the group conversations and 77 percent in the survey) said that their organization already offers environmental education. Participants

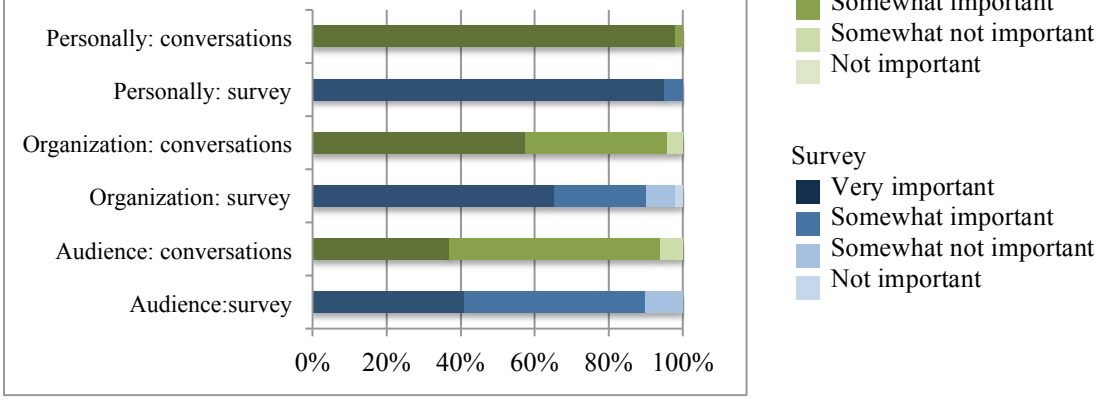
who offer environmental education were asked to describe the programming or activities that they offer, and the responses were similar among the group conversation participants and survey respondents. Most of the organizations offer or facilitate some sort of environmental education presentation, class, workshop, project, exhibit, or event. Examples that participants described include presentations by a naturalist or environmental education expert, hands-on environmental or science projects, citizen science or STEM-related activities, skill-building activities like gardening or fishing, service-learning projects, and tours or field trips. Some of the organizations provide environmental education facilities, which may include a nature center, park, outdoor classroom or garden. A few of the organizations offer clubs or camps, support employment training and volunteer programs, or provide environmental education resources such as activity guides, curriculum and learning kits.

Participants were also asked how does or would environmental education align with their organization's mission and goals. Many of the group conversation participants said that environmental education is core to their mission, explaining that they are a nature center, park, research center or environmental education service provider. Many of the survey respondents said that it complements their educational mission, which may include science education, cultural programming, community building and engagement, responsible citizenship, recreation and outdoor skills, and creation care. Other participants in both the group conversations and survey said environmental education aligns with their goal of protecting the environment, which may including preserving land and water, advancing sustainability or addressing climate change. Some said

environmental education aligns with their focus on youth development, which involves providing real-life opportunities to get involved in the community.

Participants were asked how important environmental education is to them personally, to their organization, and to their audience. The vast majority of the group conversations participants (98 percent) and survey respondents (95 percent) said that environmental education is very important to them personally. This is not surprising given the findings in the literature review that educators with high personal interest in the environment are particularly motivated to teach about the environment (Bloom et al. in Bodzin et al., 2010; Stevenson et al., 2014). Most of the participants said that environmental education is very or somewhat important to their organization and their audience. As shown in figure 7, the level of importance of environmental education tends to decrease as you go from participants personally to their organization to their audience.

Figure 7: Importance of environmental education



Why they attended

Participants were asked what motivated them to attend the group conversations and what they were hoping to get out of the discussions. Most participants said they were

interested in connecting and sharing with others in the environmental education field. They were interested in understanding different perspectives, getting new ideas to improve or expand their efforts, making new connections in order to grow their networks, developing new, mutually beneficial partnerships, getting a better idea of what is going on more holistically throughout the region and the state, and learning about success and challenges that others have faced that they could apply to their own work. Others wanted to learn about environmental education initiatives and resources, including curriculum, activities, research and ideas to apply to their own classes and presentations, ideas for increasing inclusion and equity, and more broadly to stay current on the initiatives and ideas for enhancing environmental education. Some participants wanted to become environmental education leaders either more broadly or within their organization as well as learn ways to empower the audiences they work with to become advocates for environmental issues.

Participants summary

More than 180 people participated in this project, the majority of which were staff from government agencies, nonprofit organizations, youth or community groups, or schools. Participants work with a wide range of audiences and have missions and goals that include education, protecting the environment, building community and promoting youth development. Most of the participants already offer environmental education and find environmental education to be important personally, to their organization and to their audience. The next section describes how the information gathered through the group conversations and survey was analyzed.

Data analysis methods

The information gathered from the three data collection methods – the group conversations, pre-questionnaire, and survey – was coded and analyzed to identify key themes and insights. The themes from each data-gathering method were then compared to each other and the literature review findings to identify major themes overall and describe the meaning and implications of each.

Participants at the group conversations recorded important ideas and answers to the questions on postcards. Participants also wrote down key takeaways from each discussion round on large post-its, which were posted to a gallery wall. All of the ideas gathered were entered into a spreadsheet so they could be analyzed to identify patterns and themes.

To analyze the ideas generated during the group conversations, the notes were coded using themes identified in the literature review in chapter two. Specifically, feedback from partners was compared to the established definition, goals and objectives for environmental education as well as the benefits, barriers, strategies, key elements and best practices that were provided by experts throughout the literature review. Additional themes that emerged were added into the coding process as the notes were analyzed. The number of times each theme was discussed was calculated to determine the relative frequency in which the various themes came up during the conversations. The notes from each theme were then analyzed to identify additional patterns and to summarize the discussions.

Results from the survey were analyzed to identify the highest priorities for goals, key elements, benefits, barriers, and strategies. Since the survey questions asked participants to either select their top three from a list of choices or rank the choices, responses were

summarized based on the highest priority and lower priority selections. Participants were also given an opportunity to further explain their selections, and those responses were reviewed, categorized and summarized.

The themes that emerged from the group conversations, the priorities from the survey, and the findings in the literature review where then compared to identify the major overall themes as well as other, less common themes. The feedback and insights from each information source was summarized to further explain that theme and explore connections among the sources of information.

Both the questionnaire distributed before the group conversations and the survey gathered information about the participants, their organizations, and how their work aligns with environmental education. The open-ended responses were coded according to themes that emerged, analyzed for relative frequency of each theme, and then summarized. Questions where specific options were given were analyzed to determine the percentage response for each option.

The data analysis methods were chosen in order to summarize and compare a large amount of information. The feedback gathered during the group conversations was sorted into themes based on similar ideas, and the notes were then summarized to reflect the voices of participants. The survey responses were analyzed to identify the most important and lower priorities. The themes in the group conversations and the options in the survey were based on the literature review, allowing for analysis of how these various information sources align. The next section provides an overview of the steps taken to ensure this research project met high ethical standards.

Ethics

To maintain high ethical standards, the study obtained consent from participants and ensured that steps were taken to protect participants' rights. Participants in the group conversations were provided information about the study before signing up and were asked to sign a letter of consent before the conversations started. Survey participants were required to consent to participating in the study before beginning the survey. Consent information included the purpose and objectives of the research study.

Hamline University's Human Subjects Committee approved the research plan before any data was collected. Participants' anonymity in the survey, questionnaire and results was ensured by summarizing responses and eliminating any participant-specific information. To ensure that the voices of participants' were accurately reflected, participants in the group conversations were asked to write down their ideas and answers to the questions on postcards. The small groups also recorded their ideas for major themes and insights on larger post-it notes to share with the entire group. Notes were taken during the final large group conversation to capture the ideas and discussion.

Summary

This study involved gathering feedback from the county's environmental education partners in order to improve our practice and answer the research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth? This approach aligns well with the action research methodology.

The goal was to gather feedback from a wide variety of partners through group conversations, a pre-questionnaire and online survey in order to understand how they

view environmental education, what they perceive the benefits to be, what their greatest barriers are, and what strategies or resources would be the most effective in addressing those barriers. This chapter provided an overview of the project participants and the organizations they represent. Similar to the environmental education field as a whole, the 180 participants in this project brought an array of experiences and represent a mix of organizations with varying missions, activities and audiences.

The next chapter will present the results of the research methods, exploring the major themes and priorities that emerged from the group conversations and survey and how those connect with the literature review. The research and data analysis methods used enabled common themes to be identified while also ensuring that the voices of the participants were reflected accurately.

CHAPTER FOUR

Results

A variety of methods outlined in chapter three were used to gather information to answer the research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth? Research methods included World Café style group conversations and corresponding pre-questionnaire as well as an online survey.

The following summarizes the results and themes that emerged from these data-gathering methods. For each of the four main questions, the most commonly discussed ideas from the group conversations, highest priorities from the survey, and findings from the literature reviewed are compared to identify the most important themes. These themes are further described using the feedback from the project participants and insights from the literature review. A synopsis of other themes that were less commonly discussed or ranked as lower priorities is also included. A summary of the key takeaways and overall insights from the group conversations is included to wrap up and reemphasize the most important themes. The chapter concludes with a reflection on the impact and implications of this project and the results as the county moves forward with its youth environmental education and outreach work.

What is environmental education

Participants in the group conversations were asked to answer the question: what is environmental education, considering how they would define environmental education and what the key objectives, guiding principals and best practices are. Survey

respondents were asked to prioritize the top three most important goals, elements and best practices of environmental education from a list of 10 options.

The project results align closely with the definition of environmental education described in the literature review and established by the Belgrade Charter and Tbilisi Declaration in that environmental education emphasizes behavior change, focuses on understanding connections, uses a variety of settings and educational strategies, and encourages lifelong learning in a developmentally appropriate way (UNESCO-UNEP, 1978).

The following describes the most common themes and priorities for the goals, elements and best practices for environmental education among the group conversations, survey and literature review. Less common themes are also discussed.

Most common themes

Similar themes emerged regarding the most important goals, elements and best practices for environmental education when reviewing the feedback from the group conversations, highest priorities in the survey, and findings in the literature review. Table 1 shows the most common themes that emerged from all three sources and compares them to how they were explained in the group conversations, survey and literature review.

Table 1: Most common themes for what is environmental education

Themes	Group conversations	Survey	Literature review
Encourages stewardship and motivates behavior changes	Encourages stewardship and behavior change	Encourages stewardship and motivates action to protect the environment	Learning that focuses on both knowledge gain and behavior change
Is experiential, experimental, multi-sensory, hands-on and relevant learning	Experiential, experimental and multi-sensory learning	Is experiential, interactive, hands-on and relevant	Provides opportunities for participation in environmental issues and action
Develops an understanding of our interactions with and impact on the natural world	Increases understanding of our interactions with and impacts on the natural world	Develops an understanding of our interactions with and impact on the environment	Integrates the interactions of social, economic and political systems with the environment
Fosters appreciation of and connection to the natural world	Fosters appreciation of and connection to the natural world	Fosters appreciation of and connection to the natural world	People need to value the environment and be concerned enough to take action

In the group conversations, participants explained that encouraging stewardship and behavior change means that people understand how their everyday actions impact the environment and that they develop a connection to the environment that leads to behavior change. Environmental education is a transformational experience that leads to the development of an environmental ethic, motivates people to action, increases capacity for making good decisions for the environment, and develops future environmentalists and lifelong stewards. It focuses on solutions and problem solving. When asked to further explain their selections, many of the survey respondents communicated that motivating action and encouraging stewardship are the most important goals of environmental

education, and some of the other key elements and best practices play an important role in moving people toward that ultimate end goal. This is similar to the literature review findings, which stressed that environmental education's emphasis on environmental literacy and behavior change differentiates it from prior learning models (NEEAC, 2015; NEEF, 2015).

Participants in the group conversations said that experiential, experimental and multi-sensory learning means that it provides a variety of experiences, is a hands-on interaction with the natural world, and engages the full spectrum of the senses. It is learning that is not just information, but experimentation and inquiry-based. It also builds capacity and skills such as critical thinking and problem solving. Survey respondents also added that developing a more environmentally literate society and encouraging critical-thinking were important as these help develop skills for 21st century citizens, foster the realization that actions have consequences, and help empower youth to do something with their knowledge. Similarly, the literature review explains that the goal of environmental education is to develop environmental literacy by going beyond knowledge and developing skills to ask questions, think critically about an issue, evaluate potential solutions, and make informed decisions (NEEAC, 2015).

Increasing understanding of our interactions with and impacts on the natural world means developing an awareness of ecological systems and environmental issues. This is especially appropriate for older youth. It is about making connections – that we are a part of this world, everything is connected, and our individual actions fit into larger impacts in the world and on the environment. The literature review explains that making these connections are important because people need to understand interactions among natural

and social systems in order to make informed decisions about the environment (NAAEE, 2010a). Monroe and Krasney (2015) explain that the emphasis on understanding relationships between natural and social systems is another way that environmental education is different from other learning models.

Fostering appreciation of and connection to the natural world is about building empathy and connecting with our senses and emotions. Group conversation participants explained that this is typically achieved through positive experiences in nature. Survey respondents added that as more and more people live in cities, they have increasingly lost sight of their connection with the natural world. To address this, we need to overcome the idea that humans are separate from nature and help people – especially urban dwellers – understand that nature is nearby and everywhere. Project participants explained that this is important because people tend to learn more about and take care of what they feel connected to. The importance of fostering appreciation and connection to the natural world is reflected in the literature review. The Tbislisi Declaration established that people need to be aware of, sensitive to, and concerned for the environment (UNESCO-UNEP, 1978), and Chawla and Cushing (2007) add that valuing environmental protection is an important step in someone taking action.

Other themes

Other but less common themes that emerged from the group conversations and that were ranked as lower priorities in the survey are that environmental education:

- Promotes positive experiences in the outdoors
- Builds awareness and knowledge about the environment
- Is place-based; is participatory, inclusive and culturally sensitive

- Makes social, economic and environmental connections
- Uses multiple locations and topics
- Is interdisciplinary
- Develops skills
- Is a continuous, lifelong process
- Is fun and not purely academic

Group conversation participants explained that promoting positive experiences in the outdoors is about getting kids outside, making people comfortable in nature, overcoming the "ick" factor that can come up in the outdoors, and breaking down barriers. Showing people how to find nature in their community or bridging intense outdoor experiences back to appreciating nature that surrounds them in their everyday lives is also important. Although overcoming fears was rated lower in overall priorities in the survey, respondents explained that this is critical because you cannot be concerned about protecting the environment if you are afraid of it.

Building awareness and knowledge about the environment involves understanding ecosystems, natural resources and environmental issues. It includes awareness that the environment is complex and involves exploring both opportunities and challenges. Participants explained that developing knowledge, awareness and attitudes can be the foundation to increasing engagement and motivating behavior change.

Being place-based means connecting to the space where learning is taking place or meeting youth where they are in their own environment. This also involves integrating the historical context and focusing on local issues.

Being participatory and inclusive involves connecting with different cultures, recognizing that different cultures view the environment differently, being open to different worldviews, and shattering stereotypes. Similarly, changing population and diversity was also one of the most important current trends explored in the literature review.

Making social, economic and environmental connections includes connecting the environment to physical, mental and spiritual wellbeing and building relationships and community. This involves understanding that everything is connected from a local to global level and learning about some basic connections such as where our water and food come from. Developing relationships among students and educators and building community is also important. This may also involve exposing students to career opportunities by connecting them to experts and forming relationships with passionate people working in the environmental field. These mentors are important to encouraging ongoing learning.

Using multiple locations and topics emphasizes that the environment is everywhere – in rural, suburban and urban areas. Environmental education can happen in numerous locations, such as school, nature centers, camps, clubs and field trips, and it often involves experiences outside of the classroom.

Environmental education is also multifaceted and interdisciplinary, involving differentiation of instruction and integrating environmental concepts into numerous activities, curricula and subject areas. In doing so, environmental education encourages students and teachers to take a step back and get a big picture look.

Environmental education is a continuous, lifelong process. Participants in both the group conversations and survey expressed that environmental education should start young and be developmentally appropriate throughout every age. Doing this encourages lifelong stewardship and facilitates the capacity to make good decisions for the environment at any stage. They explained that it is especially important to focus on excitement wonder and love for the natural world with younger audiences, while older students can focus more on stewardship and motivating action. Environmental education can involve both adult and youth education as well as multigenerational learning. A similar idea was discussed in the literature review, which defined environmental education as a lifelong learning process and emphasized the importance of providing early and continuing opportunities to explore and learn about the environment (NAAEE, 2010a; UNESCO-UNEP, 1978).

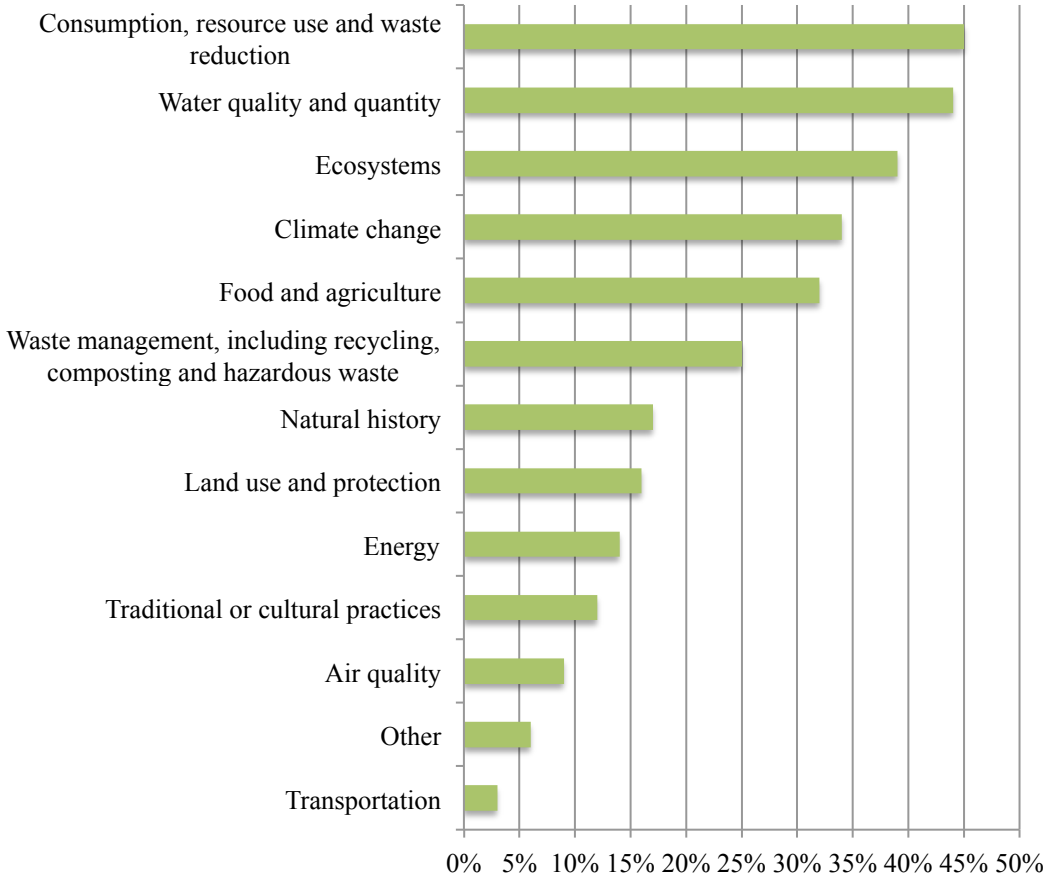
Environmental education also needs to be fun in addition to academic. Participants explained that it's important to balance how deep learning digs into challenges versus having a fun and engaging experience.

Topics for teaching environmental education

The National Environmental Education Advisory Council (NEEAC, 2015) explained in the literature review that environmental education programs typically use an environmental topic as a context for learning even though the focus is on learning to think critically about an issue, identify solutions, and make informed decisions. Participants in the survey were asked what topics they would use as a context for teaching environmental education. They were given a list of 12 topics and an "other" options, and asked to select up to three topics. As shown in figure 8, the most common

topics that survey respondents would use are consumption, resource use and waste; water quality and quantity; ecosystems; climate change; and food and agriculture.

Figure 8: Topics most likely to use as context for environmental education



Responses to "other" include social justice, animals and adaptations, social norms related to decisions that impact the environment, and personal wellbeing. Respondents also included that it is important to focus on real, everyday issues, and that the topic they would use depends on the age level.

Environmental education definition summary

An important question to return to that was posed in the literature review is the concept of education for sustainable development in contrast to environmental education

Monroe and Krasney (2015) explained that the biggest differences are that education for sustainable development integrates social, economic development and technological goals and focuses on fostering development while minimizing impact, while environmental education focuses on protecting the environment through problem-solving and critical-thinking. Although the focus on motivating action to protect the environment and understanding the interconnectedness of systems aligns well with either definition, participants in this project seem to more closely relate to the traditional definition of environmental education. Rather than supporting economic development, addressing social issues, and developing technology, their conversations and priorities focused more strictly on motivating environmental behavior change by fostering a connection to the environment and supporting lifelong learning. This reflects the statement in the literature review that the definition for environmental education established more than 40 years ago is still relevant today (Monroe & Krasney, 2015). The next section will explore the feedback from partners and insights from the literature review regarding the benefits of environmental education.

Benefits of environmental education

The second question that participants discussed in the group conversations was what are the benefits of environmental education. Participants were asked to consider why they do or would offer environmental education. Survey respondents were asked to select their top three benefits of environmental education from a list of 10 options.

Most common themes

The most common theme that emerged among the group conversations, survey priorities, and literature review findings regarding the benefits of environmental

education is that it increases interest in taking action to protect the environment. As shown in table 2, the other most common themes varied among the three sources of information. Increasing understanding of real-world issues, helping people understand their connection to the environment, and developing a sense of place were high priority benefits in the group conversations and survey. Improving wellbeing and increasing engagement in learning were important benefits that emerged from the group conversations and literature review.

Table 2: Most common themes for benefits of environmental education

Themes	**Group conversations**	**Survey**	**Literature review**
Increases interest in taking action to protect the environment	Increases interest in taking action to protect the environment	Increases interest in taking action to protect the environment	Increases interest in taking action to protect the environment
Promotes mental, physical and social wellbeing	Promotes mental, physical and social wellbeing	*Not a high priority in the survey*	Improves wellbeing
Increases understanding of real-world issues	Increases understanding of real-world issues	Increases understanding of real-world issues and systems	*Not explicitly stated as a benefit in the literature review*
Helps people understand their connection to the environment and develops a sense of place	Helps people understand their connection to the environment	Connects participants to their communities and fosters a sense of place	*Not specifically addressed in the literature review*
Increases engagement in learning	Increases engagement in learning	*Not a high priority in the survey*	Increases engagement and enthusiasm in learning

Increasing interest in taking action to protect the environment is beneficial because it promotes sustainability, creates lifelong stewards, influences future decision-makers, and develops environmental leaders and informed citizens. Participants explained that

environmental education can result in a paradigm shift from using resources up to protecting them, and it encourages positive actions where enforcement is not feasible so protecting natural resources is voluntary. Environmental education increases capacity for change by influencing values, ethics and feelings of personal responsibility. Participants emphasized that people take action about what they care about, and people who are better informed make better decisions for the environment. Survey respondents added that beyond increasing interest in the environment, it is important to help people who are already dedicated focus their energy to where they can make a real difference. These results reflect the findings of the literature review, in which many sources explained that participants in environmental education have a better connection to and sensitivity for the environment, develop a sense of personal responsibility, better understand ecological systems, and have an increased intention to act (Ledermann, 2013; Monroe & Krasney, 2015; NEEAC, 2015; NEEF, 2015).

Environmental education promoting mental, physical and social wellbeing is beneficial on a personal and community level. Group conversation participants discussed how a better environment can lead to decreased crime, improved safety, and improved public health and communities. On a personal level, environmental education taps into unused senses and nurtures our spiritual side. It develops resiliency, confidence, self-awareness, and creativity. In the end, the health of the planet and ourselves are interrelated, as planet health equals human health. Survey respondents added that the most important benefits of environmental education may depend on the age group, and that it is especially important to focus on the benefits of improving wellbeing and fostering wonder with youth. The benefit of improving wellbeing was touched on but not

explored in-depth in the literature review, suggesting that the benefits for wellbeing should be explored further.

Increasing an understanding of real-world issues enhances environmental literacy and develops a sense of personal responsibility to protect the earth. Through environmental education, people begin to understand how we can manipulate ecosystems and how our decisions impact the environment.

Group conversation participants discussed how environmental education helps people understand their connection to the environment, which instills a sense of history and something larger than themselves. It results in a connection to a place, each other, our community and our humanity. This confirms our place in nature and how we rely upon and impact each other and natural resources. It sends a message that we are not apart from nature, but rather a part of nature. Survey respondents further emphasized that connecting people to a place is important – especially as we become a more global society – as this helps realize other benefits. Knowing who you are and where you are grounds oneself, builds social ties, improves health, stimulates senses, and increases interest in taking action. The significance of connecting people to a place was not discussed much in the literature review. The importance of this from the project results suggests that this benefit needs to be explored further.

By being active, inquiry-based and inclusive, environmental education increases engagement in learning. Group conversation participants discussed how focusing on relevant issues results in better retention as students can relate to and bring their learning home. Environmental education also establishes a common ground, providing opportunities for students who may otherwise struggle to thrive and flourish. It cultivates

leadership skills, gives students responsibilities, encourages creativity, uses multiple senses, and leads to a-ha moments that can uncover new passions. It also integrates a social and cultural narrative and provides many opportunities for students to excel. And finally, it provides an opportunity to slow down and engage in learning away from screens and technology. Survey respondents added that activating different senses and encouraging different ways of thinking is a way to not only increase engagement in learning but also improve wellbeing. The project results reflect many of the findings in the literature review about how environmental education increases engagement in and enthusiasm for learning by involving real-world issues, being hands-on and cooperative, taking place in the outdoors and community, engaging a variety of learning styles, and being learner-centered (Archie, 2003; Glenn, 2000; Ledermann, 2010; Lieberman & Hoody, 1998).

Other themes

Other themes that participants discussed less frequently in relation to the benefits of environmental education and that ranked lower in survey priorities includes that it:

- Protects the environment
- Promotes critical-thinking, problem-solving and decision-making skills
- Fosters curiosity and wonder
- Enables more holistic and interdisciplinary education
- Eliminates fear through positive experiences
- Increases motivation among educators

Group conversation participants explained that environmental education protects the environment and preserves natural resources for future generations. It can lead to

improved quality of our air, water and land, better food and energy security, and reduced use of natural resources, among other positive environmental outcomes. It increases buy-in, ownership, and willingness to invest in environmental protection.

Survey respondents explained that developing problem-solving, critical-thinking and decision-making skills get to the core of what people need to understand, which is how they can make a difference for good or bad. They added that these skills are missing from our traditional classroom settings and current politics. Group conversation participants explained that the unpredictable settings participants may face in outdoor education promotes problem-solving, critical-thinking and decision-making skills.

Fostering curiosity, wonder and awe about the environment results in appreciation and respect for the natural world. Participants explained that the experiences, relationships and actions learned through environmental education can serve as a lifelong source of inspiration.

By being holistic and interdisciplinary, environmental education provides an opportunity to get more out of the regular curriculum. It can be integrated into all academic areas including math, science, writing, technology, history, arts, engineering, civics and more. It also promotes systems thinking and connections to community through educational approaches like service learning.

Positive experiences in nature help to demystify misconceptions about the environment and counterbalance negative messages and experiences. Time in unpredictable environments also builds resiliency and overcomes fears.

Finally, environmental education can increase motivation and engagement among educators as they feel responsible to pass on their love of nature. The literature review

explored in more depth the benefits of environmental education for increasing educator engagement than the project participants. Lieberman and Hoody (1998) explained that environmental education is beneficial because it gives teachers a chance to focus on students' individual skills, work in a collaborative and interdisciplinary environment, and be inspired by increased student engagement. Some reasons for the difference between the literature review and project participants could be that the group conversations and survey engaged those already passionate about environmental education, which may have led them to focus more on the benefits for participants and the environment than for educators, or that they find educators to already be engaged.

Encouraging youth development was a benefit discussed in the literature review that group conversation participants and survey respondents overlooked for the most part. Sources in the literature review explained that incorporating projects that address issues in the community give youth pride in their work, helps them feel empowered to make a difference, and prepares them with skills for the 21st century that will have a greater emphasis on green jobs and sustainability (Glenn, 2000; Lieberman & Hoody, 1998; NAAEE, 2010a). Although this did not come up in the conversations about benefits, youth development was discussed in the group conversations as an important goal, key element and strategy for environmental education.

Benefits summary

Both the project results and the literature review reveal that environmental education has a wide range of benefits. Common themes regarding the most important benefits of environmental education among the group conversation participants, survey respondents and literature review sources is that it increases interest in taking action to protect the

environment, increases understanding of real-world issues, helps people understand their connection to the environment, and increases engagement in learning. The project results provided further insights into the benefits of improving wellbeing as well as the importance of developing a sense of place. The next section examines the barriers to environmental education as discussed and prioritized by the project participants and covered in the literature review.

Barriers to environmental education

The third question participants were asked to discuss in the group conversations was what are the barriers to environmental education. Participants were asked to consider what they find challenging about environmental education or what stands in the way of offering or expanding environmental education efforts, and they were further challenged to think beyond time and resources as barriers – as those are known barriers that will likely always be there – and dig deeper into the root causes of why time and resources are barriers. Survey respondents were asked to prioritize the barriers to environmental education by selecting their top three barriers from a list of 11 options and were given an option to further explain their selections. This section digs into the barriers to environmental education as discussed in the group conversations, prioritized in the survey and researched in the literature review.

Most common themes

The group conversations, survey and literature review all discussed barriers presented by participants, faced by educators, and as a result of environmental education being broad and hard to define. But, as shown in table 3, the relative importance of each barrier varied among the group conversations. More than the other sources, the group

conversation participants focused on barriers presented by participants, including lack of interest, making environmental issues relevant, and cultural barriers and fears. They also focused more on challenges with creating and sustaining partnerships. Both the group conversations and literature review focused on challenges with understanding and integrating environmental education, and all of the sources addressed barriers related to competing requirements, priorities and standards. The survey and literature review highlighted lack of educator time, interest, knowledge and awareness of resources as a key barrier.

Table 3: Most common themes for barriers to environmental education

Themes	**Group conversations**	**Survey**	**Literature review**
Lack of interest among participants	Lack of interest among participants	*Not a high priority in the survey*	Competing interests among participants
Making environmental issues relevant to participants	Making environmental issues relevant to participants	Making environmental issues relevant and important to participants	Lack of knowledge among participants
Cultural barriers and fears	Cultural barriers and fears	*Not a high priority in the survey*	Changing demographics and lack of diversity in environmental field
The perception and understanding of environmental education	Perception and understanding of environmental education	*Not included in the survey option*	Ability to define and integrate environmental education
Competing requirements, priorities and standards	Competing requirements, priorities and standards	Competing requirements and priorities; requirements to meet organizational guidelines and/or state education standards	Competing priorities and standards

Challenges with developing and sustaining partnerships	Challenges with developing and sustaining partnerships	*Not a high priority in the survey*	*Not specifically addressed in the literature review*
Lack of educator time, knowledge, interest or awareness of resources	*Not among the most common themes in the group conversations*	Lack of awareness of resources	Lack of time, interest or knowledge among educators

Group conversation participants and survey respondents explained that youth may not be interested in environmental education because there are too many competing priorities, activities and pressing concerns, including sports, music, clubs, camps, and building a college resume. In a go, go, go society where kids have a lot of options and face a lot of pressure to excel, it is difficult to make environmental education compelling or attractive. It can also be difficult to get youth over the comfort and amenities of being inside, as not all kids like to get dirty, wet, cold, smelly, hot, or other experiences that come with spending time outside. This reflects the findings of the literature review, which explained that while Americans say that they value spending time outdoors, many barriers including access, discomfort, fear and technology can all get in the way (Clements, 2004; NAAEE, 2010c; NEEAC, 2015; NEEF, 2008; The Nature Conservancy, 2011). Furthermore, the environment may not be as appealing as the latest technology, or natural spaces may be viewed as far away and exotic rather than in one's backyard. Additionally, parents may be apathetic or unaware, or youth and families may have different cultural values. All of this can lend to a low perceived importance of environmental education.

A related barrier is challenges with making environmental issues relevant to participants. Group conversation participants explained that environmental education is competing against contrary cultural values such as consumerism. There is also a lot of

fear and misinformation about the environment and environmental issues, and environmental data can be hard to find. There may also be lack of consistency with how to take environmental actions, which makes things confusing for audiences. Additionally, the term environmentalist may have a negative perception. These findings relate to explanations in the literature review that there has been a decline in the public's understanding of basic science concepts and a disconnect between the availability of information and people's ability to use that information constructively (McBeth & Volk, 2009; NEEAC, 2015). Additionally, project participants explain that people may lack a connection to place, which can be critical to understanding and being motivated to protect the environment. It can also be difficult to get audiences to see the benefits and impacts of their actions. They explained that although everyone has a stake in the environment, creating that awareness can be challenging. Furthermore, environmental problems may seem too big or overwhelming or the effects may become apparent slowly so that individuals do not see their direct impact and think addressing issues is a low priority.

Group conversation participants also discussed that youth may face cultural barriers or related fears when it comes to environmental education and spending time outdoors. Different cultures have different views of nature, and there are real and perceived threats to spending time outdoors. This may lead parents to being concerned or afraid, and educators may lack the understanding of the varying needs and interests of diverse audiences. Survey respondents added that easy entry points into environmental issues and education are lacking for different audiences, especially those that are low income or new immigrants. Additionally, because there is a lack of people of color in the environmental field, youth of color may struggle to find role models and relate to or see their place in

environmental education. These findings are echoed in the literature review discussion about the trends of the changing population and a lack of diversity in the environmental field (NEEAC, 2015; NEEF, 2015; Taylor, 2014).

In addition to barriers presented by participants, the fact that environmental education is a broad and multifaceted field can make it difficult to understand and overwhelming to integrate. Group conversation participants discussed that there is a perception that environmental education only happens outdoors in beautiful places and focuses on science concepts, whereas really it can happen anywhere and be integrated into topics beyond science. Although this makes it important to define environmental education broadly, this can also pose challenges when deciding how and where to focus. Similarly, the literature review examined how the broad and interdisciplinary nature of environmental education presents both challenges and opportunities. Difficulties include that environmental education can be hard to define, challenging to integrate into the formal education system, easy to omit from education all together, and confusing in knowing how to apply it (Peffer & Bodzin in Bodzin et al., 2010; Monroe & Krasney, 2015; NEEAC, 2015). Project participants further discussed how showing the importance of environmental education can be difficult because it is hard to quantify results and measure success. The benefits of environmental education are often long-term instead of immediate and apparent, and it may be hard to calculate the cost of not doing environmental education. Environmental education also faces political barriers as environmental issues and science have become politicized, making it challenging for educators to navigate the politics from families and get support for their efforts.

Competing requirements, priorities and educational standards can stand in the way of offering environmental education. Group conversation participants discussed how the emphasis on standardized testing in schools with a focus on reading and math limits the time that educators and students can spend on other learning areas. Teachers may not teach or seek out training in subjects that are not clearly integrated into state education standards. Survey respondents added that the structure of formal education makes it inherently difficult to incorporate environmental education because class periods are too short, class sizes are too big to effectively lead a group outside, lessons need to fit into state standards, and there are a lack of volunteers or ambassadors who can help. Furthermore, group conversation participants discussed how the interdisciplinary nature of environmental education can be in opposition to the education system that is divided by subject area. This can lead to a failure to connect systems and may mean that environmental education is relegated only to science. Environmental education also must compete with other educational programs. In the literature review, Ledermann (2010) and Stevenson et al. (2014) addressed difficulties similar to those identified by project participants with standardized testing and the structure of the formal school system.

Because environmental education and environmental issues are multi-faceted, many organization and entities must be involved to address it successfully. Additionally, many environmental education programs are short-term even though it would benefit both educators and youth if they were longer-term. Effective partnerships can be critical to establishing and sustaining longer-term environmental education efforts. But project participants pointed out that there are many challenges with developing and sustaining partnerships and programs. Building relationships takes years, and many people are not

willing or able to make that commitment. Teachers often lack expertise in environmental education, may not know how to integrate it into various subject areas, may not have time to learn more about or plan how to integrate environmental education, and may not be aware of the resources available. They may also lack a connection to those who can help. Many entities, including community leaders, advocates, schools, businesses and nonprofits can be involved in environmental education partnerships, but collaboration is often not funded. Organizations may also have a lack of staff, which limits their capacity to build relationships. And a change in staff can mean a loss of a champion and loss of momentum, relationships, and sustainability of programs and partnerships. Additionally, a lack of access to a diverse representation of environmental educators can make it harder to reach diverse audiences. The literature review did not specifically address challenges in developing and sustaining partnerships. The amount of discussion on this topic during the group conversations suggests it is an important barrier to be explored further.

Other themes

Other barriers to environmental education that project participants discussed less frequently and ranked lower include:

- Lack of access to resources, funding and staff
- Lack of educator knowledge, confidence and interest
- Lack of leadership or administrative support
- Safety and liability concerns

Group conversation participants discussed how lack of access to resources, funding and staff is a barrier for several reasons. Educators may lack access to curriculum, especially local sources of information. There may be challenges in accessing and

experiencing natural areas in effective ways. This may be because class times are too short, group sizes are too large, and getting transportation funding to get to a site is difficult. Additionally, teachers may not be aware of the resources available and may not have the time or expertise to find the resources. Curriculum coordinators or other positions within schools that serve to connect teachers to resources have been cut from many budgets, and organizations with resources may not know how to connect to teachers or get the attention of schools.

Another barrier to environmental education can be educators who lack interest, knowledge and confidence. Group conversation participants discussed that educators may lack the expertise, background knowledge or confidence in their knowledge to teach environmental topics or issues. They may also be unsure about bringing their students outside, and they may view environmental education narrowly – thinking there is only one way to experience nature. Educators may be resistant to change or feel insecure about integrating environmental education into their curriculum. They may be hesitant to teach subjects that are viewed as difficult or politicized, such as climate change. And environmental education is not always a passion for educators, reducing their likelihood to incorporate it. Survey respondents added that in some instances, lack of buy-in from adults can be a major challenge – the youth may be on board and ready to impact change but the adults are not interested in getting involved or helping to lead by example. Similarly, the literature review included many barriers for educators, including difficulty connecting with teachers because they are pressed for time and have many competing priorities, real or perceived lack of knowledge and confidence among educators in their ability to conduct environmental education, perception of where environmental education

needs to take place, and lack of training opportunities (Archie, 2001; Bloom et al. in Bodzin et al., 2010; Landers et al., 2002; Ledermann, 2013; Peffer & Bodzin in Bodzin et al., 2010; NEEAC, 2015; NEEF, 2015; Stevenson et al., 2014).

Both the group conversation participants and survey respondents discussed how educators may face a lack of leadership or administrative support. Leadership that does not view environmental education as a priority or may not understand the benefits can be a major obstacle for educators. Other educators may face unclear expectations of what they are allowed to do in terms of environmental education. As explained by Landers et al. (2002) and Ledermann (2013) in the literature review, leadership support is a critical factor in schools comprehensively integrating environmental education because incorporating environmental education is usually not required.

Group conversation participants briefly discussed how safety and liability can be a concern with environmental education as there are real and perceived barriers to going outdoors, and there may be a fear of being sued.

Barriers summary

Numerous and wide-ranging barriers to environmental education were covered in the group conversations, survey and literature review. All of these sources included barriers presented by participants, barriers faced by educators, and barriers related to defining and integrating environmental education. The group conversation participants emphasized barriers presented by participants, including lack of interest, challenges with making environmental issues relevant, and cultural barriers and fears. The literature review and survey priorities emphasized barriers faced by educators, including competing requirements, priorities and standards, and lack of educator time, knowledge, interest and

awareness of resources. Both the group conversations and literature review explored difficulties presented by the broad and multifaceted nature of environmental education. And more than the other sources, the group conversation participants also highlighted the challenges with developing and sustaining partnership and programs. These wide-ranging results emphasize that there are numerous barriers to environmental education that must be addressed in order to carry out successful partnerships and programs. The next section explores the strategies suggested by project participants and explored in the literature review for overcoming these barriers and successfully offering environmental education.

Strategies for environmental education

The last question that participants were asked to discuss during the group conversations was what strategies are needed to address the barriers and support and expand environmental education efforts. Participants were encouraged to consider what support or resources they need. Survey respondents were given a list of eight strategies to support or enhance environmental education efforts and were asked to rank the strategies by what would be most effective. Each strategy was given a total weighted score, and many of them ended up being ranked fairly evenly by respondents. This section explores the strategies suggested by group conversation participants and ranked by survey respondents and how those connect with the strategies covered in the literature review.

Most common themes

The group conversations, survey, and literature review covered a wide range of strategies to address barriers and improve or enhance environmental education efforts. As shown in table 4, ideas for supporting partnership and program development and providing professional development opportunities were included as high priority

strategies across the sources of information. The group conversations aligned with the literature review in focusing on changing or integrating curriculum and standards and providing networking opportunities. These strategies were not ranked as highly in the survey. The project participants in both the group conversations and survey added ideas regarding defining and championing environmental education and developing local, specific and relevant resources.

Table 4: Most common themes for strategies for environmental education

Themes	**Group conversations**	**Survey**	**Literature review**
Supporting partnerships and program development	Supporting partnerships and program development	Support for developing partnerships and programs	Developing partnerships
Defining and championing environmental education	Defining and championing environmental education	Getting buy-in from leaders and policymakers	*Not specifically addressed in the literature review*
Developing local, specific and relevant resources and messages	Developing local, specific and relevant resources and messages	Increasing communication about environmental education and the resources available	*Not specifically addressed in the literature review*
Changing or integrating curriculum and standards	Changing curriculum and standards	*Not ranked highly in the survey*	Integrating curriculum
Providing training and professional development	Providing training and professional development	Providing training and professional development	Providing professional development opportunities
Providing networking opportunities	Providing networking opportunities	*Not ranked highly in the survey*	Providing networking opportunities

Group conversation participants discussed how supporting partnerships and program development could be accomplished in many ways. One suggestion was to use

environmental education mentors, which could mean connecting naturalists and environmental education experts with teachers and youth leaders. This would help get environmental education into classrooms, connect it to standards, raise awareness of resources, and make teachers more comfortable with the principles and best practices of environmental education. Participants also suggested requiring schools to create partnerships with environmental organizations, such as watershed organizations, nature centers and nonprofit organizations. Getting a department of education specialist to coordinate, collaborate, support and offer resources for environmental education efforts was also discussed. They suggested that collaboration among community and cultural groups could be supported by engaging community leaders and block leaders, working with community-based organizations such as libraries, schools and businesses, and pursuing cross-cultural approaches. This approach could help to diversity the workforce in the environmental field. Participants also discussed proving more ongoing opportunities for engagement by meeting people where they are, such as bringing environmental education to community spaces such as bus stops, libraries and pocket parks; integrating environmental education into existing activities and technology; finding more ways to get people on adventures in nature and connect to their place in the environment; and providing opportunities for parents and children to learn together. Similar to the project participants, sources in the literature review emphasized how partnerships are critical to the success and expansion of environmental education, and the strengths of partnerships outweigh the extra time and effort required. Environmental education partnerships can help teachers become more familiar with environmental issues while enabling environmental experts to become more familiar with teaching strategies,

as well as being an effective way to reach multicultural audiences (Athman & Monroe, 2001; Monroe & Krasney, 2015; NEEF, 2015; Peffer & Bodzin, 2010).

Defining and championing environmental education by better advocating for it with leadership and measuring and communicating benefits and successes came out as an important strategy among the group conversation participants and was ranked especially high among the survey respondents. Advocating for environmental education includes raising the saliency of environmental education among policymakers, elected officials and school principals. It also includes identifying champions for environmental education, developing more diversity in environmental education leadership, and establishing a clear definition and shared values statement for environmental education so that everyone is speaking and understanding the same principles and outcomes. Within the formal education sector, participants discussed including a clear definition of environmental education in state standards, advocating for environmental education to be included in state science standards, changing curriculum requirements, and requiring schools to allocate funding for environmental education. Another critical part of advocating for environmental education is improving measurement and how the value of environmental education is communicated. Participants discussed reviewing the research, establishing or sharing tools to collect measurable data, showing and documenting positive outcomes, quantifying efforts to prove success, and telling success stories. Although defining environmental education was discussed as a barrier in the literature review, strategies to address this barrier were not specifically addressed in the literature review.

Another strategy suggested by project participants is to develop local, specific and relevant resources and messages. This starts with knowing your audience, understanding what motivates and resonates with them, and speaking to their interests, passions and values. This is important because it gets to the root of "why should I care" and lets kids know that it is okay to care about and protect the environment. This requires connecting to participants' daily lives and showing them how they can get involved in their communities. Some ways to do this include using issues with a narrow focus and impactful and achievable results, bringing STEM education to the real world by connecting with local programs to find solutions, providing local data, and integrating environmental education into technology that youth are already using. This strategy also includes connecting people with places that have meaning to them and places in their communities. Additionally, taking a cross-cultural approach and integrating culturally specific programming and strategies to overcome cultural barriers are important considerations.

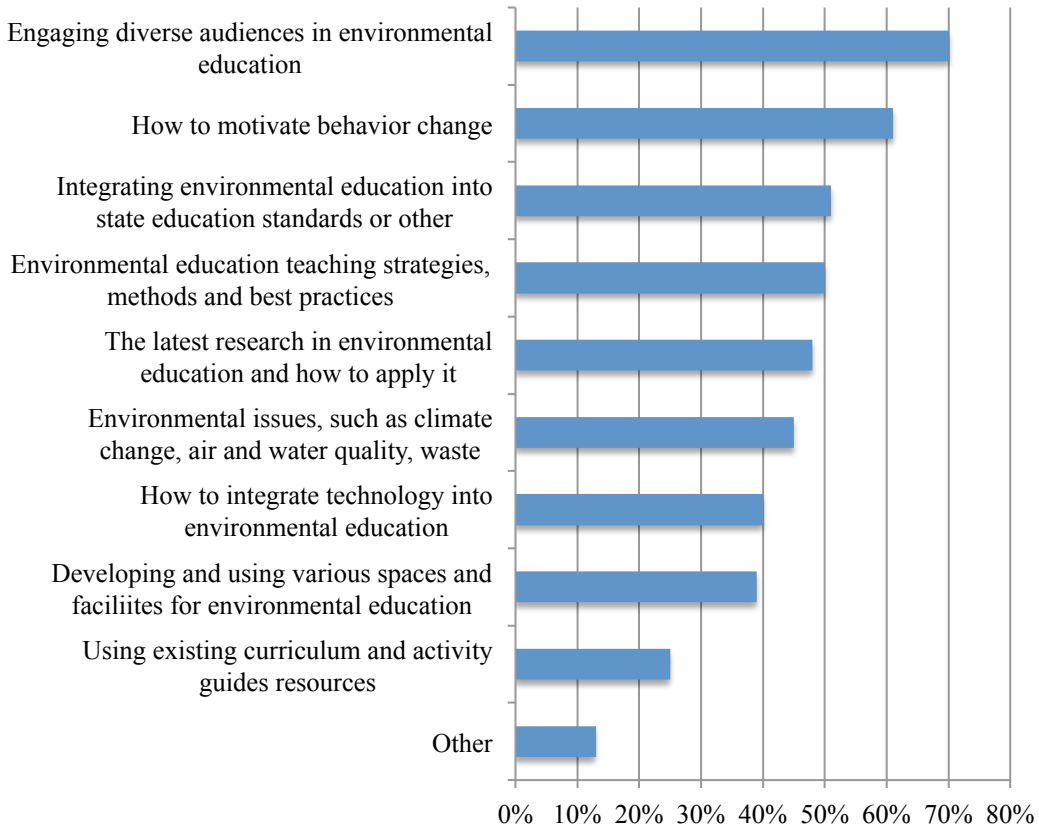
Making changes to curriculum, standards and practices to better integrate environment education was another strategy discussed. Group conversation participants suggested establishing a clear definition of environmental education that is included with education standards and providing curriculum that meets standards. They also discussed being more interdisciplinary when incorporating the outdoors and finding ways to integrate environmental education with technology and STEM learning. Addressing this strategy could also include changing class styles and scaling lessons to manageable chunks. Survey respondents also ranked highly the need to increase communications about environmental education and the resources available, while the need to increase access to

or availability of curriculum resources ranked somewhat lower. In regards to curriculum, the literature reviewed focused more on how providing environmental education curriculum that is supported with professional development opportunities can enhance educators' competency and motivation to teach environmental issues (Monroe and Krasney, 2015; Stevenson et al., 2014). The literature review includes an overview of existing curriculum resources, which could be reviewed to determine how appropriate they are for partners to use or to adapt to be more locally relevant.

Recognizing that educators need to be passionate and knowledgeable about environmental education to be effective, providing training and professional development opportunities were additional strategies suggested. This aligns with what Fleming (2009) explained in the literature review that professional development is one of the most commonly identified and immediate needs for environmental education. Training is a way to enhance competency among educators, help a greater diversity of educators see their role in environmental education, and elevate environmental education in the formal school system (NAAEE, 2010b; NEEAC, 2015). Many participants discussed training teachers, including getting them out in nature to better understand how to take kids outside, doing in-school training, showing teachers how to use their schoolyards, and using a variety of learning styles and teaching strategies. Project participants discussed the importance of offering graduate credits instead of just continuing education credits (CEUs) to motivate teachers to attend training. A train-the-trainer model that would create mentors was also suggested, along with expanding the demographics of educators and relying on them to make environmental issues and education relevant to their communities.

The literature review included potential topics for professional development that survey respondents were asked to prioritize (Fleming, 2009; Ledermann, 2013; NEEAC, 2015; NEEF, 2015). Participants were given a list of nine topics as well as an "other" option and asked to select as many as they would be interested in. As shown in figure 9, the survey respondents' highest priorities for professional development topics were engaging diverse audiences, motivating behavior change, integrating environmental education into standards, and using teaching strategies and best practices for environmental education.

Figure 9: Topics survey respondents are interested in learning more about



Responses to "other" included using school gardens, making environmental education more accessible to all audiences and communities, learning how to affect policy changes,

seeing examples of environmental education success, and learning how to engage urban students.

Participants were also interested in having networking opportunities. Project participants suggested coordinating meetings and networking opportunities on a regular, ongoing basis to bring together like-minded partners but also encourage a diversity of thought. In the literature review, Fleming (2009) addressed the need for networking as opportunities for renewal and inspiration, ways to share success stories and lessons learned, and develop partnerships. Similarly, project participants discussed how networking opportunities would be an avenue to connect people doing similar work, develop partnerships, allow for better sharing of resources and program ideas, as well as facilitate opportunities to take risks collectively. Networks could also better connect local service providers and environmental education experts to educators such as teachers or youth group leaders who may have less expertise or experience in environmental education.

Other themes

Other strategies that were discussed less frequently in the group conversations and ranked lower in the survey include:

- Supporting youth development and leadership
- Providing grants and funding
- Increasing access to outdoor spaces and environmental education programs

Supporting youth development and leadership involves working with youth at all ages. Participants discussed the importance of starting young to spark the interest of youth and instill passion but then continue to engage in middle and high school so that they

maintain their curiosity and awareness. Programs should empower youth by being youth-driven with guided support, connecting youth to what they are interested in, providing opportunities for them to contribute to their communities, and showing them how they can make change happen. Participants discussed how youth can get worn down by hard sciences and engineering when the learning is more theoretical than practical, so providing hands-on opportunities where youth get to design and implement things is important. Supporting youth development also includes exposing youth to career opportunities and providing paid learning opportunities for older youth.

Providing grants and funding is one way to address the issue that there is a gap between interest and the ability to serve in environmental education field. Participants suggested funding collaboration opportunities, especially formal partnerships between schools and environmental organizations. This reflects the idea presented by Ledermann (2013) in the literature review that providing small grants of $5,000 to $10,000 to schools can go a long way in helping teachers integrate environmental education. Providing assistance with grant applications to help entities secure funding was also discussed. Reducing or eliminating fees for parks, environmental education programs or camps for certain audiences would be another way to provide financial assistance that increases access.

Participants suggested additional strategies for increasing access to outdoor spaces and environmental education programs, such as providing outdoor and experimental learning opportunities for diverse audiences to get kids outside in their own backyards and communities and develop outdoor skills. These efforts should overcome cultural

perceptions that certain spaces are not accessible to certain groups and help connect people to a place or their local environment.

Greening buildings and grounds was discussed in the literature review as a strategy for environmental education that achieves multiple goals, including leading by example, reducing environmental impacts, saving on operating costs, improving the health and wellness of students, connecting youth to the outdoors, and providing hands-on, real-world learning opportunities (NEEAC, 2015). Although project participants did not specifically mention green buildings and grounds as a strategy, this could be a way to achieve goals related to increasing access, connecting participants to nature close to home, making environmental issues local and relevant, and supporting place-based education.

Strategies summary

Numerous strategies were suggested by project participants and in the literature review for overcoming barriers and successfully offering environmental education. The most commonly suggested and highest priority strategies among project participants were supporting partnerships and program development, defining and championing environmental education, developing local and relevant resources, making changes to curriculum and standards, providing training and professional development opportunities, and providing networking opportunities.

Many of the strategies recommended by project participants were also covered in the literature review, with both the project results and literature review providing greater insights depending on the topic. But there were a few strategies where the literature review and project results diverged. The need to collaboratively define and advocate for

environmental education was strongly emphasized by project participants but was not specifically addressed in the literature review. Conversely, greening buildings and grounds was covered in the literature review but overlooked by project participants. However, this could be a means to achieve other strategies suggested by project participants such as connecting people to places nearby and increasing access.

Just as the barriers to environmental education are numerous and wide-ranging, the many strategies discussed imply there are multiple avenues to address those barriers. The next section explores the key takeaway identified during each discussion round of the group conversations as well as the overall insights and takeaways from the wrap-up full-group conversation.

Key takeaways and insights

During the last few minutes of each discussion round of the group conversations, participants were asked to reflect on their conversation, identify the key takeaways, and write them down on large post-it notes. These were gathered, reviewed, grouped by like ideas, and posted to a gallery wall. To wrap up the group conversations, staff presented the gallery wall, explaining the key takeaways and the themes that emerged, and then asked participants to reflect on their overall insights or takeaways from the day.

The key takeaways tended to reiterate the insights gained during the conversations but seemed to push participants to articulate their ideas more clearly. Therefore, this serves as a good wrap-up of the results overall. The following includes a summary of the key takeaways for each of the questions as well as an overview of the overall insights discussion that occurred at the end of each group conversation.

Definition of environmental education key takeaways

Similar to the most common themes, the key takeaways regarding the definition, goals and key elements of environmental education includes that it encourages stewardship and behavior change to protect the environment by inspiring connections, developing an environmental ethic, instilling responsibility and ownership, motivating action and fostering lifelong stewardship. Environmental education is experiential, experimental and multi-sensory by including hands-on experiences, sensory-based learning and inquiry-based approaches. It also fosters and appreciation of and connection to the natural world, which builds empathy and excitement.

Environmental education makes connections, builds relationships and communities and increases awareness and knowledge about the environment and ecosystems. It focuses on positive experiences, overcomes fears, uses partnerships and mentors, and is participatory, inclusive, customized and culturally relevant.

Environmental education is a continuous, lifelong process that focuses on understanding our interactions with and impacts on the environment. Finally, environmental education is place-based and interdisciplinary, uses multiple locations and topics, develops skills, and is fun in addition to being academic.

Benefits key takeaways

Increasing participants' interest in taking action to protect the environment was a top key takeaway for the benefits of environmental education. Participants explained that this fosters lifelong environmental stewardship and motivates the next generation of conservationists, leaders and decision-makers. Environmental education also opens up economic opportunities by exposing young people to career opportunities, moves people from apathy to positive environmental actions, and provides access to lifelong

inspiration. Another important key takeaways is that environmental education promotes mental, physical and social wellbeing on a personal to community level. Environmental education also helps us understand our connection to the environment as well as to a place, other people, our community and our humanity, which can empower us to make better decisions for the environment. It helps us understand that this is our world and our impact.

Environmental education is also inclusive and promotes diversity, establishes a common ground, increases engagement in learning, gets youth off screens and into the physical world, and provides an opportunity for youth to get engaged with and contribute to their communities. It provides holistic and interdisciplinary educational programming; increase understanding of real-world issues, actions and solutions; promotes systems-thinking and environmental literacy; fosters curiosity and wonder; and builds appreciation and respect. In addition, environmental education results in environmental protection; eliminates fear by focusing on positive experiences; expands opportunities for youth; and develops critical-thinking and decision-making skills.

Barriers key takeaways

Challenges with developing and sustaining partnerships was a primary key takeaway related to the barriers for environmental education, with participants expressing how it can be challenging to build and sustain relationships, involve a diverse representations of environmental educators, and integrate environmental education across programs and subject areas. Additional key takeaways included cultural barriers, fears among participants, and educators lacking experience or understanding of how to meet the needs and interests of diverse audiences. Lack of interest among participants is another

challenge, with apathy, lack of access, technology, competing interests and activities, lack of information and misinformation, and the influence of parents all coming out as barriers. Misunderstanding of what environmental education is and the perception that environmental education or environmental issues are political is another barrier. Additional challenges include the difficulty of measuring results, quantifying success and communicating the benefits of environmental education.

Other key takeaways regarding the barriers to environmental education include competing requirements, an emphasis on reading and math in K – 12 education, and state standards and testing requirements. It is also difficult to make environmental issues relevant to audiences when the issues can be overwhelming, political or in opposition to other societal values such as consumerism. Additional barriers include lack of access to curriculum, lack of funding for collaboration, and difficulty accessing natural areas or being able to conduct education in an effective way.

Furthermore, educators may not have enough background knowledge in environmental education or issues, may be resistant to change, may not have the resources or expertise to integrate environmental education into their curriculum, and may lack a connection to those who could help. Finally, there may be policies, lack of buy-in from leadership, or safety and liability concerns that stand in the way of conducting environmental education.

Strategies key takeaways

Providing local, specific and relevant resources and messages was an important key takeaway. This includes understanding the local community and audience, collaborating with cultural and community groups, being diverse and inclusive, respecting all voices

and shared leadership, and integrating environmental education into things people are already passionate about and interested in. Another strategy is to support partnerships and program development by focusing on building relationships, connecting people to resources, supporting community-based efforts, and integrating environmental education into mainstream education. Defining and championing environmental education by getting more buy-in from leadership, finding ways to better measure and communicate the value and success of environmental education, and supporting environmental education champions and leaders is also a key strategy. Curriculum and resources could be improved by having resources that are interdisciplinary, locally relevant, incorporated into state standards, and use relevant technology.

Supporting youth development and leadership with youth-driven programs that show kids how they can make a difference at all ages was another key takeaway. It is also important to increase access to environmental education programs by providing more outdoor classrooms, developing more ongoing opportunities, offering targeted programming to appeal to diverse audiences, supporting community-based efforts, implementing financial strategies to increase access for lower-income populations, pursuing ways to be inclusive of all cultures, and focusing on getting kids outside in their communities and backyards.

Increasing connections through networking opportunities and providing training and professional development is critical to supporting youth educators and a strong environmental education system. These opportunities would increase educator knowledge and comfort, facilitate partnerships and mentorship, and connect expertise, experience

and resources. Finally, providing grants and funding or reducing fees would support partnerships and collaboration and make environmental education more accessible.

Overall insights and takeaways

To wrap up the conversations, the full group was asked to reflect on and share any overall insights or takeaways that had gained from the day. The themes that emerged from these larger group discussions were:

- The need to define, advocate and champion for environmental education
- Be diverse and customized
- Provide positive, relevant experiences that connect people to a place
- Support partnerships and networking
- Innovate and integrate

To define, advocate and champion environmental education, participants discussed needing both stronger statewide leadership and local environmental education champions. They said that it is important to recognize that there are critical decisions to be made right now, especially politically, in regards to environmental issues and education. And that there is work to be done to define environmental education, acknowledging that it is a broad topic that involves many different people doing different work.

Being diverse and customized means being intentional about our approaches to diversity and getting people of all backgrounds to realize that they can work in, participate in, and advocate for the environment and environmental issues. It requires focusing on equity and providing opportunities to youth who would not otherwise have them. It also involves defining environmental education broadly – getting out of the classroom, recognizing that it includes but is not just about school teachers, and

incorporating both in and out of school learning opportunities. Being aware of developmental stages and making learning appropriate to the age and level of the audience is also important.

Having positive and relevant experiences that connect people to a place can get youth more engaged. These experiences can also help get beyond doomsday messaging and make environmental issues relevant while also focusing on the future. Providing student-led experiences outside of the classroom is one way to accomplish this.

Partnerships and networking are critical to the success of environmental education. Participants acknowledged that everyone needed to work together beyond these conversations, and they recognized that it would be important to build partnerships with each other as well as finding ways to better connect with schools and teachers. Our collaborative environmental education efforts could be improved by gathering best practices and strategies from other organizations and disciplines, quantifying results, sharing strategies and proactively promoting resources. And because relationship building and planning environmental education programming can be a broad and overwhelming task, it's important to keep it simple and start small and then build on those successes.

Getting innovative means thinking creatively, especially about how to use technology in a helpful and appropriate way. Integrating means including environmental education and outdoor learning in all subjects, incorporating environmental education into standards, and taking a holistic approach to engage multiple learning styles.

Summary

This chapter explored the results and major themes that emerged from the group conversations and survey responses as well as connections to the literature review to answer the research question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth? For each of the four major questions, the most commonly discussed themes from the group conversations, highest priorities from the survey, and findings from the literature review were compared to identify and explain the most important themes. In order to capture all of the ideas shared by project participants, other less common or lower priority themes were also discussed. This was followed by a summary of the key takeaways and final wrap up discussion that focused on overall key insights from the group conversations.

The group conversations, survey and literature review provided a wealth of in-depth information about how project participants and experts in the field define environmental education, the benefits and barriers to offering environmental education, and ideas for strategies to improve environmental education efforts. The amount and variety of information gathered confirms that environmental education is a broad and multifaceted field. The definition, goals and key elements, and benefits are wide-ranging, which serves as both an opportunity and a challenge. There are barriers from participants, for educators and presented by leadership and the field as a whole. But there are also many strategies to address those barriers.

In trying to answer the research question, it could have been easy to assume what the benefits of environmental education are for partners, what barriers they face, and even

what they think environmental education is, and then design strategies around those assumptions. Indeed, some of those assumptions are reflected in the literature review. I explored topics that I thought would be the most important benefits and barriers and the obvious strategies to address those.

One of the goals of this project was to convene partners to make sure that we were not assuming but instead were acting to address their reality. Some of the results served to confirm my assumptions about the most important key elements, goals, benefits, barriers and strategies for environmental education. But in many areas, the feedback I got provided additional insights into what partners think and what support they need. Because of the amount of information gathered, identifying themes and separating out the most common or highest priority ideas provides a place to focus. We cannot realistically address every barrier or implement every strategy, so identifying the most important will help shape an action plan going forward.

This project helped to solidify the county's position as an expert, leader and connector for environmental education in our region. When we formed the youth outreach team and started to work more collaboratively to understand and improve our efforts in 2012, we felt like beginners – implementing small programs with limited reach. However, this project has served an in important next step in better understanding our programs, our reach and our position within the environmental education field as a whole in our region. It is clear from the level of participation and the feedback we received that we have a role to play in coordinating, connecting and supporting our environmental education partners. The results from this project have already been useful in shaping the future direction of

the youth outreach team, and we have plans in place to share these results and continue the conversation with our partners.

The next chapter wraps up this project with a discussion of lessons learned, new understandings of the literature review, and project limitations. Ideas for future research, plans for using and sharing results, and a final reflection on the project are also included.

CHAPTER FIVE

Conclusion

Chapter four provided an overview of the group conversation and survey results as well as an analysis of the alignment between the results and the literature review to answer the question: what are the most effective strategies for a local government agency to support partner organizations in implementing environmental education for youth?

This chapter provides a final reflection on the project and research process. Lessons learned, new understandings gained from the literature review, important sources of information, and project limitations are discussed. Additionally, ideas for future research and plans for using and communicating results are shared.

Lessons learned

Conducting a large research project that involves many elements – including summarizing information from experts, planning meetings, analyzing data, and writing up results – provides many learning opportunities throughout the entire process. During this project, I learned about the research process and my working style. I came to better appreciate the value of conversations and the success of holding World Café style meetings. I was reminded of the importance of being a flexible facilitator and researcher. And I made some mistakes and identified things I would do differently in how I collected and analyzed the data. The following in some more insights into my most important lessons learned.

Research is a process

One of the primary things I learned during this research project is that conducting research and writing a capstone paper is a journey. At the beginning, I was more focused on the daunting task of writing the literature review than anything else. And although this part was a lot of work, it also was really just a giant research paper, which I had plenty of experience doing by the end of my grad school career.

What I did not anticipate was how many different steps and processes are involved with conducting research and writing a capstone paper. A project like this takes a lot of patience, diligence and organization because there are so many different elements that go into the paper and that are required to conduct the research. It's not just about assessing the sources and information available and compiling them into a literature review. It's also about reflecting on the intent and meaning of the research and organizing what your project will be. It involves identifying who will participate and how the research will impact those participants in order to get approval to move forward. Then it's about actually conducting the research and gathering data. My project involved setting up meetings, sending invitations, facilitating conversations, and creating and promoting the online survey. And the steps after that included data collection, summarizing, and even more writing. And when you think you are all done, there are additional steps involved with sharing results and continuing the conversation with project participants to identify and act on next steps. Throughout the process, finding ways to stay organized, motivated and passionate has been critical.

I also came to realize that I could not fully know what my process would be for certain elements of the project until I dug in and started working on it. For example, the literature review became an iterative process of finding and reading sources, taking notes, writing

up sections, and filling in gaps. I did not really know how I would organize my sources, read and take notes on them, or compile and write them up until I got started. That process became more refined and easier to follow as I went along. Similarly, I had to start analyzing my data before I could figure exactly how I would code the feedback, organize it into themes, and write up the results chapter. Because each element of the project developed and evolved as I went along, being persistent and giving the appropriate space and time to each task was important to ensure that the project would slowly come together.

Personal work style

I learned quite a bit about my work style throughout this process. I struggled at times with staying focused and feeling too overwhelmed to dig in. I came to appreciate how chipping away at small chunks would quickly result in getting a lot accomplished. I also had to accept a certain level of inefficiency throughout this project. I found that for me, working at a frenetic pace was not realistic. Instead, I had to leave room to wander, think, and be distracted between bursts of productivity. I learned to have enough self-awareness to know when I was not capable of doing my best work and needed a break. And sometimes my best ideas and inspirations came when I was able to give my mind a rest, such as while riding my bike or talking a walk.

I learned that I work well in a setting that balances being around other people and being able to focus – such as a coffee shop or library – and that I need to switch it up and move locations every few hours in order to sustain my focus. Additionally, much to my annoyance, I came to accept that I – and I think most people – are inclined to procrastination and driven by deadlines. I had plenty of time to finish this paper but did

not make great progress until the deadline was looming. Although this adds some unnecessary stress, it also forces productivity and was critical for me to complete this project.

Recognizing the importance of self-care and leaving time to attend to other matters in life that are either necessary or enjoyable, especially as a working student, was important throughout this project. Striking a balance between getting my work and schoolwork done while still maintaining relationships and pursuing activities and hobbies was critical. Throughout this project, I especially made sure to leave time to get outside and spend time in nature because this helped me reconnect with why I am interested in this work in the first place and served as a source of motivation and inspiration.

Another important thing I had to accept in order to complete this project is that there will always be more to learn. Being a self-proclaimed overachiever, I know that the literature review especially is longer, explores more topics, and pulls from more sources than what was required. But at the same time there are still some topics I barely had time to investigate and sources I did not have time to read. This will hopefully serve as inspiration to continue my learning after I finish this project.

World Café conversations

Surprisingly successful. The World Café conversations were by far the most inspiring and motivating part of this project for me. As I planned and carried out the meetings, I was worried that this part of the project may seem self-serving. I was concerned that I was asking people to give up a good amount of time to simply provide me with information. So I was heartened to hear again and again from participants how much they enjoyed the conversations. Many people told me that they were grateful for

the opportunity to discuss issues that they feel passionate about with others who also care, and they left feeling engaged and energized. So although planning the meetings was a bit stressful because there were many details to attend to and I wanted to ensure it would be worth people's time, providing a space for people to come together and discuss issues they care deeply about was extremely rewarding.

The energy and enthusiasm that participants brought to each conversation helped to reignite and fuel my passion for this project. As I compiled the results, identified themes and summarized the feedback, I felt a great responsibility to make sure their voices and ideas were expressed with accuracy and with the same level of passion that they brought to the conversations. The participants reinforced for me that this is important work, and this project has presented a great opportunity to honor that and move our work forward.

Being a flexible facilitator. All of the conversations reminded me that while it's important to have a solid facilitation plan in place, it is also critical to be flexible and ready to adapt to the situation to make it work.

The process I used for summarizing and sharing key takeaways was developed during the first conversation and diverged from my original plan. Because we got more cards after each conversation round than we thought participants could realistically read through and make meaning of during a gallery walk, I instead had my colleagues read through and group the cards by like ideas after each conversation round before posting them. They then presented the gallery wall to the group before we discussed overall insights and key takeaways.

Additionally, the plan for the final conversation had to be adjusted to be appropriate and comfortable for the smaller group size. I quickly decided that I needed to conduct

that conversation more like a focus group, eliminating some of the more interactive elements, taking notes for the group, and providing a space for more intimate conversation.

Throughout the conversations, it was interesting to see how each group of participants varied. Quite a few people at the first conversation were relatively new to the environmental education field while many others represented government agencies. Compared to later groups, the first group was a little quieter but still quite insightful. The second group brought together many individuals who had been working in the environmental field for quite a long time and were deeply passionate about this subject. They maximized every minute of conversation, even during breaks, and sometimes required a firm voice to keep them focused and moving. Even though the conversation went on for more than three hours, they were not ready to wrap up at the end. Their engagement was incredible but required me to be on the top of my facilitation game to keep them focused and moving. The third conversation group was more introspective. The energy level in the room was a little calmer than other conversations, but the final full group wrap up seemed the most insightful and productive. The final conversation was a small group that required me to again adjust on the go and conduct the session more as a focus group. Even with a small group, the conversation and insights gained were valuable to both the participants and to me as a researcher.

Collecting and analyzing data

World Café conversations. The conversations resulted in a large amount of feedback and comments to be analyzed and summarized, and I was not exactly sure how to proceed initially. Pulling from the survey options, which were developed based on the literature

review, helped to guide me in coding and organizing the information as well as ensuring my results would relate back to the literature review. I went back through the results multiple times in order to further refine, organize and consolidate my themes. But even after that, I still wonder if some of the themes are so closely related that they should be combined. I received a lot of insightful and wide-ranging feedback, so figuring out how to organize and summarize it was an ongoing challenge. In writing up the results, I made sure to strike a balance between summarizing the feedback and reflecting the voices of participants. I did this by incorporating specific comments from the participants when they were especially relevant or insightful.

When compiling the results from the group conversations, it was difficult to figure out how to deal with the discussion notes and the key takeaways. They mostly reinforced each other, with the most common themes from the group discussions being similar to the most common themes of the key takeaways. I noticed that the key takeaways discussion encouraged participants to more concisely and precisely refine their comments, but the repetitiveness made it a hard to know how to share these findings without being too duplicative. In the end, I used the key takeaways and overall insights as a way to wrap up the results discussion.

Survey. Even though I went through the survey multiple times before sending it out, compared the answer options to the feedback gathered during the group conversations, and had colleagues review and test it, I realized while analyzing the data that several things could have been improved about the survey design. I think that some of the answer options where respondents were asked to prioritize or rank options were too duplicative. This surprised me because I based the options on the literature review and discussions I

had with my colleagues, and I reviewed them numerous times before sending the survey. Because of this, I'm unsure I would have been able to determine that the options were too duplicative until after I analyzed the results. I also added some themes into the analysis of the group conversation results that I was not able to add to the survey options because the survey questions and options were written at the same time as the conversation questions. Looking back, it would have been ideal to refine the survey options after the analysis of the group conversation results was mostly complete.

Participants. I feel conflicted about having different participants between the group conversations and survey. One goal with the survey was to give additional opportunities to participate for those who could not attend a group conversation. But although each method focused on gathering information about the definition of, benefits of, barriers to and strategies for environmental education, the questions asked, the way they were asked, and the ultimate goal of each method was different. The group conversations focused on uncovering collective wisdom and getting a lot of ideas from participants in order to identify themes. The goal of the survey was to have participants prioritize options for the different questions.

Although about half of the group conversation participants responded to the survey, and about 75 percent of the survey responses came from people who had not attended the group conversations. Because of this, figuring out how to analyze and correlate all of the data was a challenging, especially because the survey gave more quantitative data related to prioritizing options and the group conversations gave deeper, more qualitative information. I wonder if restricting the survey to the group conversation participants and basing the options more closely to the feedback gathered during those conversations

would have been a better way to approach it, although this would have eliminated the goal of allowing for wider participation. Another option would have been to structure the questions in the survey more similarly to the group conversations, but even then the survey respondents would not have had the benefits of discussing their answers with others, and the data, because it would have been mostly open-ended, would have been challenging to code and theme. Overall, I'm still not quite sure what would be the best way to address this challenge.

I also realized after analyzing the data and writing up the results that I should have collected data about the participants differently. First of all, I realized I was not completely consistent in what data I collected about the participants in the pre-questionnaire for the World Café conversations and the survey. I also should have asked some questions more specifically or offered options for the questions. For example, in one open-ended question I asked participants to describe the audiences they work with, including age and demographics, the geographic area that they serve, the number of people that they work with, and the types of activities and services that they offer. Because this question was open-ended and had a lot of parts to it, the responses I received varied widely and were therefore hard to analyze. I usually got information about ages of participants, geographic area and activities offered, while receiving less information on demographics and size of audience. It would have been much easier to split that question up and offer options, such as giving ranges for the ages they work with and audience size. However, I'm not sure I would have effectively been able to come up with some of those option choices until after analyzing the data that I did receive. Unfortunately, I think

failing to gather this information about the participants, their organizations, and their audiences is possibly the biggest missed opportunity in this project.

Lessons learned summary

This project was a large undertaking with many different steps and elements. Parts of it involved writing a giant research paper, while at other times it required event planning, facilitation and relationship building. And at the end, my focus was on organizing and summarizing a large amount of feedback and data in order to turn it into something my partners, colleagues and I can use and act on. The wide-ranging tasks and goals of this project provided many learning opportunities. I learned things personally about the research process and my work style. I was enthused by the energy of the World Café conversations, but I struggled with organizing and analyzing the data. And there are things throughout the process I would improve – some of which I have specific solutions for while for others I'm still unsure what changes should have been made. The next section will explore my insights into the literature review, including the most useful sections, most important sources, and new understandings.

Literature review insights

The literature review included a wealth of information about a wide range of environmental education topics. Some of the sections in the literature review directly informed my research methods, questions and data analysis processes, while other sections will provide useful context as I incorporate the research results into action planning. Some of the sources from my literature review stood out as especially useful and insightful. And by comparing my project results to the literature review, I have gained new connections and deeper understandings of the information I gathered from

experts in the field. This section will explore in more depth the most important sections and sources from the literature review as well as new understandings I gained of the literature review.

Most important sections

The most important sections of my literature review have been those that relate closely to the development and analysis of my group conversation feedback and survey questions. These include the goals, objectives, key elements, benefits, barriers and strategies for environmental education. The options in the survey questions were developed based on the information gathered and summarized in these sections of the literature review, and the feedback from the World Café conversations were coded into themes based on those survey options. This made it easy to compare the results of my research to the literature review. The section on roles in environmental education was helpful for similar reasons in that it allowed me to compare the participants in my group conversations and survey to what is typically found in the broader field of environmental education.

Other sections, although not as important to carrying out my research and analyzing data, will still serve as important context as I figure out how to take the feedback gathered through this project and apply it to my work going forward. These sections include the history of environmental education both nationally and locally, trends impacting environmental education, educational approaches, and best practices for various environmental education strategies.

Important sources

Several of the sources in my literature review were critically important because they provided information and insights throughout the various sections. Possibly the most important source of information was the North American Association for Environmental Education (NAAEE). I referred throughout the literature review to many documents produced by the NAAEE, including their guidelines for excellence series and their analysis of how environmental education aligns with various national education standards. These resources contributed to numerous sections of the literature review, including the goals, roles, strategies, benefits and barriers. Through this project I came to better appreciate the role that NAAEE plays in advocating for the work of environmental educators and providing guidelines and resources to improve their practice. Other national organizations that contributed greatly to my literature review include the National Environmental Education Foundation (NEEF), which was the primary source in the trends section of the literature review, as well as the National Environmental Education Advisory Council (NEEAC), which provided context for the history of environmental education policy nationally as well as insights into trends, goals, strategies, benefits and barriers.

There were quite a few environmental education researchers and experts that made further important contributions to the literature review. I used Monroe and Krasney's publication *Across the Spectrum* (2015), which was published by the NAAEE, to provide context for the history of environmental education as well as for the trends, goals, key elements, settings, educational approaches, roles, strategies, benefits and barriers. Similarly, Athman and Monroe's paper on the *Elements of Effective Environmental Education Programs* (2001) provided important context about the environmental

education field as well as best practices for partnerships and program development. The book, *The Inclusion of Environmental Education in Science Teacher Education*, edited by Bodzin et al. (2010) provided a wealth of knowledge that I used in nearly every section of the literature review.

I also found numerous local sources that provided valuable information to apply to my specific geographic context. Ledermann from the Minnesota Department of Natural Resources provided valuable context about the history of environmental education in Minnesota (2010). Additionally, his report on a project he implemented working with schools contributed to sections on environmental education barriers and strategies (Ledermann, 2013). Local policy documents, including the *Minnesota GreenPrint for Environmental Education* by Kennedy and Stromme (2008) and the *Environmental Literacy Scope and Sequence* by Landers et al. (2002), helped develop my understanding of the vision and goals for environmental education in Minnesota specifically. These documents will be useful references as I work to take action on the project results.

Throughout the literature review, I was impressed by the amount and quality of information available. I used a wide variety of sources but also have no doubt that I could have kept going to glean even more information from many more sources. Although some sources were especially useful for either providing a wide range of information or for being a central authority on environmental education, I appreciated the insights gained from all of my sources.

New connections and understanding

Throughout the project, the process of taking the feedback from project participants and comparing the results to the literature review helped me to better understand the

information included in the literature review. The results especially helped put in context the importance of some of the literature review findings. In some instances, the project results added to or diverged from the literature review, which I think uncovers some of the assumptions I made about certain topics when developing the literature review while also adds to the understanding of that specific topic.

The definition, goals, best practices and key elements for environmental education described in the literature review were the most closely aligned with the feedback from partners. Environmental education in both the literature review and project results focuses on motivating behavior change, making connections, using experiential, hands-on, interdisciplinary and varied learning techniques, and encouraging lifelong learning. This reinforces that the definition of environmental education, established about 40 years ago, remains relevant today.

Some of the benefits of environmental education expressed by partners align closely with the literature review, but there were a few benefits that partners highlighted as being more important than the focus given in the literature review. Those that align closely include increasing interest in taking action to protect the environment and increasing engagement in learning. Benefits that partners identified as also being important include improving personal and community wellbeing and connecting people to a place. The focus on these benefits by partners suggests that the applicable research should be explored further.

The relative importance of certain barriers over others varied between the literature review and project results. The literature review focused a lot on barriers for educators while the conversations and survey focused more on barriers for participants and

families. The literature review included information on barriers for participants of accessing environmental information and to spending time outside, but did not specifically explore how to make environmental education compelling and relevant to participants who have a lot of other interests and options. This made me realize that there is more to learn about how to overcome barriers related to competing interests and priorities among participants. A barrier explained in literature review and echoed by participants that I think can be easy to overlook are the challenges with defining and understanding how to integrate environmental education. This barrier includes challenges with evaluating outcomes, measuring success, and communicating the importance of environmental education. The similarities between the literature review and project results helped me to better appreciate this as a key barrier and made me realized that it will be important to think about strategies to address this. Additionally, feedback from participants offered some more in depth information compared to the literature review regarding barriers to developing and sustaining partnerships. Challenges that participants expressed included the time and effort required to build relationships and the loss of momentum that results from staff turnover. These barriers are critically important to consider because partnerships are at the center of the environmental education efforts at my work.

Within the strategies section, I found that the strategies included in the literature review seem more narrowly defined than the ideas I received from the group conversations and survey. Both the literature review and project results included the need to develop partnerships, integrate curriculum, and provide professional development and networking opportunities. But beyond that, project participants discussed the need to

change the system. Specifically, participants talked about establishing a clear definition of environmental education, better advocating for environmental education, changing educational standards, and finding ways to better integrate curriculum. They talked about a need to develop environmental education champions and raise the importance of environmental education among leaders and decision makers. Participants also discussed the need to develop local and relevant resources and increase access to programs, which may help address the lack of interest among participants.

Literature review insights summary

The literature review provided information that I used throughout my project and will continue to use in the next steps of using and sharing the results. The most important sections of the literature review applied directly to the development of my research questions and analysis of my results, while other sections will be useful as I consider how to implement strategies. I also gained an appreciation for some key sources that I used throughout my literature review and will continue to look to as important sources of information in the environmental education field.

When considering new connections to and understanding of the literature review, I found that overall, the project results showed a close alignment with the definition of environmental education explored in the literature review, which is that environmental education focuses on behavior change, connections, experiences, and lifelong learning. But participants emphasized some different benefits and barriers compared to the literature review as well as articulating ideas for additional strategies. Within each of these areas, there is more information to explore both in the research and with partners to better understand the meaning of the results and the best way forward. The next section

explores both the limitations of this project as well as opportunities for future research and using and sharing the results.

Limitations and opportunities

Acknowledging the limitations of my research, identifying opportunities for future research, and planning how I will use the results are important steps as I wrap up this project. The research faced some limitations related to the gaps in the group of participants and the specific geographic scope, which makes it difficult to extrapolate information. Opportunities for future research include digging into specific questions from the results, following up with groups of participants who were missing from the conversations and surveys, learning from similar entities around the country, and encouraging others to duplicate the research methods. The results from this project will be used to guide work planning for the county's youth environmental education and outreach team. They will also be shared with project participants in order to continue the conversation about improving environmental education for youth and will be shared more broadly so others in the field can learn from both the methods and results of this research.

Limitations

Some of the primary limitations of my study are related to the participants and the research methods used to get their feedback. The project focused on involving participants from a specific geographic area to get insights from their personal experiences. This is extremely valuable for my work but means that the information gathered cannot necessarily be extrapolated to apply to other situations. The methods, however, could be replicated to gather similar data from another area or group of people.

The group of participants, while varied, was not necessarily inclusive. The invitation to participate was extended broadly, but participants self-selected, so only those who wanted to and were able to attend were included. This approach fits with the World Café assumption that the people who are gathered have the knowledge and wisdom to answer the questions being discussed (Brown & Isaacs, 2005). However, I identified some clear gaps when analyzing the information about the participants. Underrepresented partners and potential partners include grantees and other partners that we work with who represent more underserved and diverse populations as well as schools and teachers. This is especially important because many of the barriers to and strategies for environmental education focused both on reaching and including more diverse populations and training teachers or finding ways to better coordinate with schools. Both of these groups of partners would need to be reached out to specifically to further explore how these strategies may work for them.

Future research

This research project is a valuable source of important information that has already provided guidance to the future of environmental education for youth at the county. But this project does not mean the end of our learning and research. There are many things we can do to build on this project to better understand the insights from our partners and how to develop strategies in response to their feedback. There are also opportunities for others to implement similar projects with their partners.

To figure out how the project results will influence the future direction of the youth environmental education and outreach team at the county, I presented the initial results to the team and facilitated a process to develop a future-focused work plan and goals.

Additional steps involved in developing this work plan include evaluating how the results influence our existing programs and partnerships as well as identifying our priorities for enhancing or expanding our efforts. I will also be updating the youth environmental education and outreach team's goals, best practices, outcomes, and priorities based on the results and insights from this project.

Some of the barriers identified or strategies suggested may need further exploration to figure out exactly what the implications are and what role the county may play in addressing the issues. For example, we need to dig into what the real barriers are to integrating environmental education lessons into standards as there are a lot of curriculum resources available that are aligned with standards. We also may need to learn more specifics about topics that partners expressed interest in learning more about, such as what diverse audiences they are struggling to engage and what additional research is available related to motivating behavior change. Additionally, partners expressed strong interest in better defining environmental education, integrating that definition into state education standards, and advocating for environmental education among leaders and policymakers. The county will need to assess what leadership we can provide in that realm versus the leadership that is needed on a broader, statewide level. As in any organization, we will face limitations of capacity in staffing, time, resources and scope as we work to address the project results. Because of that, the county will be able to address some of the barriers and strategies suggested, but we may decide that others are not feasible or within our scope to take on.

In the limitations section, I identified some gaps in who participated in my research. These were mostly community groups representing diverse audiences and teachers or

representatives from schools. A different approach, such as interviews or more specific recruitment, may be needed to engage these groups in conversations to get their insights in response to the research questions and strategies suggested.

I would also like to research and conduct interviews with entities around the country doing similar work with partners on environmental education efforts. These interviews would focus on the programs and services that these entities offer, the benefits they see, and the barriers they face. The insights gained from these interviews would inform my work by uncovering what others have learned while implementing certain strategies.

The methods used to collect feedback from partners, including the World Café style conversations and survey, could be duplicated in other geographic regions to gather insights from partners. The results from these conversations would both help to define the environmental education field broadly by comparing similarities and differences in results as well as identifying specific needs, barriers and strategies for that geographic area.

I have many ideas for continuing this research. Some of these ideas I will pursue naturally as I continue to coordinate youth outreach efforts at my work, while others will require special attention either in building capacity to explore the idea or in sharing information from the project with others so that they can carry out similar projects.

Using and communicating results

An important goal for this project was to have it directly inform and impact my work. This project was identified as a priority by the county's youth environmental education and outreach team that I coordinate, but we struggled to figure out how and when to implement it. My master's capstone project presented the perfect opportunity. The project

results will be critically important to guiding plans for the future of environmental education for youth at the county. Honoring the time and energy that project participants have already given by sharing results and continuing the conversation will be another important step, along with finding ways to share the results and research methods more broadly in the environmental education field.

The results from this project will directly and immediately provide direction for the youth environmental education and outreach team at the county. The initial results have already been summarized and presented to the youth outreach team. I then conducted a facilitated discussion about the results and held a brainstorming session to identify future work tasks and projects for the team based on our partners' feedback. The next steps are to finalize the work plan and update our strategy document to include a summary of the results and updated goals, best practices and outcomes based on this project, and present our findings to leadership.

The results will also be shared with participants and other partners in multiple ways. A report that summarizes results, conclusions, and next steps will be made available to partners on our website and will be shared through newsletters, social media and other communication channels. Participants and other partners will be invited to a networking meeting in the summer 2017 where I will present the results and facilitate a process to continue the conversation. Partners will be engaged in a discussion about the insights gained from the results and where we should go from here to incorporate the feedback and move forward toward the goal of improving and enhancing environmental education in the county.

I will also seek opportunities to share my research methods and results with environmental education experts and entities more broadly, including at local, regional or national conferences. The results may give similar entities insights into how they can improve environmental education in their community. Training in the methods would empower other entities to host similar conversations to better connect partners and gain insights into environmental education in their area.

Limitations and opportunities summary

Although this project had some limitations related to its specific geographic scope and gaps in participants, my ideas for future research and sharing results may help address those limitations. Specifically, alternative strategies could be developed to engage groups of participants whose input was missing from the group conversations and survey, and my plans for sharing my research results more broadly could help others in the field duplicate my research methods with their audiences. Overall, I'm excited to start using my results, follow up on the ideas for future research, and pursue additional opportunities to share my results as all of these steps relate to some of the core goals of this project, which were to create capacity to gather feedback from partners, better understand the environmental education field broadly and within the county, and gain insights into how we can improve environmental education for youth.

Conclusion

When asked to describe this project and why I was doing it, I would often explain that I considered this to be the middle of a conversation. The need for this project was identified over the course of many years as I worked with my colleagues to develop, support and improve our environmental education efforts. Collaborating with partners has

always been central to that work. Throughout the process of assessing our efforts and identifying opportunities, we knew that there were things we could do to improve our work and build deeper relationships with partners in order to better meet the needs of youth throughout the county. We also wanted to better understand our role within the environmental education system in our region. This is why the higher-level assessment carried out through this project was needed.

The literature review, group conversations and surveys included the voices of many experts in the field explaining how they define environmental education and its most important goals and elements. I have heard from them why environmental education is beneficial, what barriers stand in the way, and what strategies are needed to address those barriers and enhance our collective efforts. Through exploring the history of environmental education both nationally and locally, I have a better understanding of the context in which I am working. I have also gained knowledge in how to pursue strategies effectively by researching best practices and guidelines for excellence. Throughout this process, I have worked to overcome my assumptions by authentically listening to both the experts in the field and the experiences of our partners.

I have encountered and had time to reflect on many lessons learned through this project. I have learned quite a bit about myself and my work style, and I have developed a better understanding of the process of conducting research. I have gained appreciation for the value of group conversations for generating ideas and making connections. I know where I would have improved or collected data differently, and I have many ideas for how to extend this project, communicate the results, and further my learning. I better understand my role and the role of the county within the environmental education field in

our region and the opportunities we have to be a leader, advocate, connector and supporter for environmental education.

With the results summarized and key themes identified, this project will help guide my work for years to come. As I wrap up, I am excited to take what I have learned and honor the feedback and insights offered by my project participants by working with them to pursue ideas and move this work forward. I am excited to build on the enthusiasm, energy and expertise that they brought to this project to collaboratively provide even better environmental education opportunities for more youth. And although I know that we face many challenges, I also know that we will continue to find value, connections and action as we continue the conversation.

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Appendix A: Group conversation schedule and sample invitations

Sample email invitation:

GreenPartners

Tools and resources for Environmental Education Partners

You're receiving this email because you provide programming or services to youth, and we think you might be interested in joining our conversation. Please contact Alisa Reckinger at alisa.reckinger@hennepin.us or 612-348-4788 if you have any questions.

Envisioning the future of environmental education for youth

Connecting youth to the natural world, helping them learn about environmental issues, and working with them to develop solutions is critical to prepare them for a world with increasingly complex environmental challenges.

Help Hennepin County understand how we can best support youth development and environmental education efforts by joining in a conversation to uncover the benefits of, barriers to, and effective strategies for engaging youth in environmental education.

Join the conversation

The conversations will be an opportunity to:

- Share your innovative ideas and help shape the direction of environmental education for youth in the county.
- Provide your feedback and ideas on environmental education efforts from the county and your own organization.
- Network with others working to engage youth in protecting the environment and discuss challenges and opportunities.

These meetings are hosted by the Hennepin County Environment and Energy youth outreach team. The ideas gathered will also be used in a Master's of Environmental Education thesis project for Hamline University. Results, conclusions and next steps from the research project will be shared with partners once the study is complete in spring 2017.

Schedule

Meetings are scheduled for the following dates and locations. Each meeting will be the same, so you only need to attend one.

- Tuesday, August 23 from noon to 3:30 p.m. at the Ridgedale Library, 12601 Ridgedale Dr in Minnetonka
- Thursday, September 15 from 8:30 a.m. to noon at the Mississippi Watershed Management Organization, 2522 Marshall St NE in Minneapolis
- Thursday, September 29 from 10:30 a.m. to 2 p.m. at the Brookdale Library in Brooklyn Center

Lunch and refreshments will be provided.

Who should attend?

Anyone interested in providing programs or services to youth, preparing them for the future, or protecting the environment is encouraged to attend. We are hoping to engage both current and potential partners in these conversations, and a diversity of perspective and experiences will enhance the dialogue.

Please share this information with anyone you think may be interested.

RSVP

Registration is free, but please RSVP.

Sample postcard invitation:

Envisioning the future of environmental education for youth

Connecting youth to the natural world, helping them learn about environmental issues, and working with them to develop solutions is critical to prepare them for a world with increasingly complex environmental challenges.

Help Hennepin County understand how we can best support environmental education efforts by joining in a conversation to uncover the benefits of, barriers to, and effective strategies for engaging youth in environmental education.

Join the conversation

- Share your innovative ideas and help shape the direction of environmental education for youth in the county.
- Provide your feedback and ideas on environmental education efforts from the county and your own organization.
- Network with others working to engage youth in protecting the environment and discuss challenges and opportunities.

Schedule

Each meeting will be the same, so you only need to attend one.

- **Tuesday, August 23 from noon to 3:30 p.m.** at the Ridgedale Library in Minnetonka
- **Thursday, September 15 from 8:30 a.m. to noon** at the Mississippi Watershed Management Organization in northeast Minneapolis
- **Thursday, September 29 from 10:30 a.m. to 2 p.m.** at the Brookdale Library in Brooklyn Center

Who should attend?

Anyone interested in providing programs or services to youth, preparing them for the future, or protecting the environment is encouraged to attend.

We are hoping to engage both current and potential partners in these conversations, and a diversity of perspective and experiences will enhance the dialogue.

RSVP

RSVP at *www.hennepin.us/environmentaleducation*.

Contact Alisa Reckinger at *alisa.reckinger@hennepin.us* or 612-348-4788 with any questions.

34-112-05-16

Hennepin

Hennepin County
Public Works
Environment and Energy
701 4th Ave. S., Suite 700
Minneapolis, MN 55415

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Join the conversation: Envisioning the future of environmental education for youth

Appendix B: World Café planning and hosting guide

What are World Café Conversations?

World Café

is an easy-to-use method for creating a living network of collaborative dialogue around questions that matter in service to real work. Cafés in different contexts have been named in many ways to meet specific goals, for example Creative Cafés, Strategy Cafés, Leadership Cafés, and Community Cafés. World Café conversations are based on the principles and format developed by the World Café, a global movement to support conversations that matter in corporate, government, and community settings around the world.

World Café is also

a provocative metaphor enabling us to see new ways to make a difference in our lives and work. The power of conversation is so invisible and natural that we usually overlook it. For example, consider all the learning and action choices that occur as people move from one conversation to another inside our organizations and communities. What if we considered all of these conversations as one big dynamic Café, each a table in a larger network of living conversations which is the core process for sharing our collective knowledge and shaping our future? Once we become aware of the power of conversation as a key process in all aspects of our lives, we can use it more effectively for our mutual benefit.

The World Café is built on the assumption that ...

People already have within them the wisdom and creativity to confront even the most difficult challenges; that the answers we need are available to us; and that we are Wiser Together than we are alone.

What's essential about the World Café method?

We have outlined a series of guidelines for putting conversation to work through dialogue and engagement. If you use these guidelines in planning your meetings and gatherings, you'll find you are able to create a unique environment where surprising and useful outcomes are likely to occur. A World Cafe is always intimate, even when it scales to very large numbers.

illustration by Nancy Margulies

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World Café Guidelines: Seven Design Principles

Conducting an exciting World Café Conversation is not hard—it's limited only by your imagination! The World Café format is flexible and adapts to many different circumstances. When these design principles are used together they foster collaborative dialogue, active engagement, and constructive possibilities for action.

1) Set the Context

Pay attention to the reason you are bringing people together, and what you want to achieve. Knowing the purpose and parameters of your meeting enables you to consider and choose the most important elements to realize your goals: e.g. who should be part of the conversation, what themes or questions will be most pertinent, what sorts of harvest will be more useful, etc..

2) Create Hospitable Space

Café hosts around the world emphasize the power and importance of creating a hospitable space—one that feels safe and inviting. When people feel comfortable to be themselves, they do their most creative thinking, speaking, and listening. In particular, consider how your invitation and your physical set-up contribute to creating a welcoming atmosphere.

3) Explore Questions that Matter

Knowledge emerges in response to compelling questions. Find questions that are relevant to the real-life concerns of the group. Powerful questions that "travel well" help attract collective energy, insight, and action as they move throughout a system. Depending on the timeframe available and your objectives, your Café may explore a single question or use a progressively deeper line of inquiry through several conversational rounds.

4) Encourage Everyone's Contribution

As leaders we are increasingly aware of the importance of participation, but most people don't only want to participate, they want to actively contribute to making a difference. It is important to encourage everyone in your meeting to contribute their ideas and perspectives, while also allowing anyone who wants to participate by simply listening to do so.

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World Café Guidelines: Seven Design Principles, cont.

5) Connect Diverse Perspectives

The opportunity to move between tables, meet new people, actively contribute your thinking, and link the essence of your discoveries to ever-widening circles of thought is one of the distinguishing characteristics of the Café. As participants carry key ideas or themes to new tables, they exchange perspectives, greatly enriching the possibility for surprising new insights.

6) Listen Together for Patterns & Insights

Listening is a gift we give to one another. The quality of our listening is perhaps the most important factor determining the success of a Café. Through practicing shared listening and paying attention to themes, patterns and insights, we begin to sense a connection to the larger whole. Encourage people to listen for what is not being spoken along with what is being shared.

7) Share Collective Discoveries

Conversations held at one table reflect a pattern of wholeness that connects with the conversations at the other tables. The last phase of the Café, often called the "harvest", involves making this pattern of wholeness visible to everyone in a large group conversation. Invite a few minutes of silent reflection on the patterns, themes and deeper questions experienced in the small group conversations and call them out to share with the larger group. Make sure you have a way to capture the harvest – working with a graphic recorder is very helpful.

World Cafe Design Principles Stamp Illustrations by Nancy Margulies

For a more in-depth look at the World Café design principles, see the World Café book, "The World Café: Shaping Our Futures through Conversations that Matter", or attend the **Hosting World Café: The Fundamentals** Signature Learning Program at Fielding Graduate University.

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World Café Conversations
At a Glance

- Seat four (five max) people at small Café-style tables or in conversation clusters.
- Set up progressive (at least three) rounds of conversation, approximately 20 minutes each.
- Engage questions or issues that genuinely matter to your life, work, or community.
- Encourage participants to write, doodle and draw key ideas on their tablecloths (and/or note key ideas on large index cards or placemats in the center of the table).
- Upon completing the initial round of conversation, you may ask one person to remain at the table as a "table host" for the next round, while the others serve as travelers or "ambassadors of meaning." The travelers carry key ideas, themes and questions into their new conversations, while the table host welcomes the new set of travelers.
- By providing opportunities for people to move in several rounds of conversation, ideas, questions, and themes begin to link and connect. At the end of the second or third round, all of the tables or conversation clusters in the room will be cross-pollinated with insights from prior conversations.
- In the last round of conversation, people can return to their first table to synthesize their discoveries, or they may continue traveling to new tables.
- You may use the same question for one or more rounds of conversation, or you may pose different questions in each round to build on and help deepen the exploration.
- After at least three rounds of conversation, initiate a period of sharing discoveries & insights in a whole group conversation. It is in these town meeting-style conversations that patterns can be identified, collective knowledge grows, and possibilities for action emerge.

Once you know what you want to achieve and the amount of time you have to work with, you can decide the appropriate number and length of conversation rounds, the most effective use of questions and the most interesting ways to connect and cross-pollinate ideas.

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Café Etiquette

Play! Experiment! Improvise!

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Appendix C: Group conversation facilitation guide

Group discussion – facilitation guide

• Registration, breakfast:	8:30 – 8:55 a.m.	(25 min.)
• Introduction:	8:55 – 9:05 a.m.	(10 min.)
• Question 1:	9:05 – 9:30 a.m.	(25 min.)
• Move tables:	9:30 – 9:35 a.m.	(5 min.)
• Question 2:	9:35 – 10: 00 a.m.	(25 min.)
• Move tables and break:	10:00 – 10:10 a.m.	(10 min.)
• Question 3:	10:10 – 10:35 a.m.	(25 min.)
• Move tables:	10:35 – 10:40 a.m.	(5 min.)
• Question 4:	10:40 – 11:05 a.m.	(25 min.)
• Break and view gallery:	11:05 – 11:15 a.m.	(10 min.)
• Summarize wall, identify major themes:	11:15 – 11:35 a.m.	(20 min.)
• Wrap up, final thoughts, announcements:	11:35 – 11:50 a.m.	(15 min.)

Facilitation guide

- Introduction
  - Goal is to envision the future of environmental education in the county
  - County offers a variety of environmental education programs, have been successful because of our partnerships, challenge with reaching our entire population (large and diverse) and best allocating our limited resources
  - Have assessed and made changes to improve our programs and pursue additional partnership opportunities, but need to better understand what our partners need to really move forward
  - This feedback is also being used as part of a research project for completion of a master's thesis at Hamline University
  - Having a series of conversations to uncover the definition and benefits of, barriers to, and effective strategies for environmental education
  - Bring out the collective wisdom in the room in order to help the county identify the most effective ways to support environmental education among our partners
  - Answer the following questions thinking about what they mean personally to you, your organization, and your audience and community (we know what the research/experts say, we're looking to capture your wisdom, knowledge and experience)
  - 4 questions, 25 minutes each to discuss
  - Small groups of 4 to 5 – lead your own discussion

- Each person should jot down ideas on a piece of paper – this is important as it will help us capture ideas and collective wisdom; will review after the meeting to identify major themes in answer to each question
- In the last 5 minutes of the conversation, we will ask your table to identify the key ideas, themes, questions, takeaways, etc. that are emerging from your conversation. Write these on a larger post-it note. These will be gathered as posted to the wall.
- The research project also includes a survey, which will be sent this fall, and interviews with similar entities from around the country. The results will be compiled and shared when project is complete in May 2017

- Questions:
  - Question 1: What is environmental education? (yellow
    - Think about how you would define environmental education and what the key objectives, guiding principles, best practices are.
  - Question 2: What are the benefits of environmental education? (green)
    - Why do you or would you offer it?
  - Question 3: What are the barriers to environmental education? (orange)
    - What do you find challenging about environmental education?
    - What stands in the way of offering environmental education or expanding your efforts?
    - Note: we know that time and resources, especially funding, are key barriers, so please try to dig deeper into the root causes of why time and resources are barriers. Some barriers we have found through research include:
      - Ability to integrate environmental education into programming and activities
      - Requirements to meet organizational guidelines and/or state education standards
      - Competing requirements and priorities
      - Access to curriculum and resources
      - Lack of interest among participants, administration or fellow educators
      - Knowing how to make environmental issues relevant and important to your audience
      - Lack of training and professional development opportunities
      - Educator knowledge of and confidence in teaching environmental education and environmental issues
      - Lack of suitable space and facilities
      - Lack of organizational capacity
      - Safety and liability concerns

        - Challenges in building and maintaining the necessary partnerships
    - Question 4: What strategies are needed to address the barriers and support and expand environmental education efforts? (pink)
        - What support or resources do you need?
        - Examples of strategies we have found through research include:
            - Training opportunities to learn more about:
                - Using existing curriculum and activity guide resources
                - Integrating environmental education into state education standards or other requirements
                - Engaging diverse audiences in environmental education
                - Environmental issues
                - Environmental education teaching strategies, methods and best practices
                - How to apply the latest research in environmental education strategies and best practices
                - How to motivate behavior change
                - How to integrate technology with environmental education
                - Developing and using environmental education facilities
            - Support for:
                - Developing programs or partnerships
                - Assessing and evaluating your programs and activities
                - Greening your buildings and grounds and developing environmental education facilities
            - Having opportunities for renewal, networking, sharing success stories and experiencing effective programs
            - Having environmental education programming available for your audience or organization to participate in
            - Having grants or other funding sources available
            - Having additional curriculum resources on specific topics or for specific types of activities created

Supplies

- Tablecloths
- Food: meal, snacks and drinks
- Hand-drawn signs:
    - Welcome
    - Schedule/flow + ground rules/conversation guide

    - Each question
    - Gallery
- Table supplies
    - Notecards
    - Large post-its
    - Markers and pens
- Registration
    - Name tags
    - Letter of consent sign in
- Timekeeping bell

Facilitation staff helps with:

- Set up and take down
- Registration
- Gathering notecards and post-its after each conversation round
    - Each question has been assigned a color that corresponds with the notecards and large post-its for that round
    - Notecards are to capture all of their ideas; post-its are for larger themes and takeaways
    - Notecards will be collected to be reviewed later
    - Post-its will be reviewed, grouped by like ideas/themes, and posted to the gallery wall
- Recording and posting ideas during insights and final reflections
    - We'll wrap up by having everyone gather around the gallery wall. After reviewing the major themes, insights and takeaways from each question, people will be asked to share their insights, themes and takeaways from the conversation as a whole. We'll write these up for them and post to gallery. Before they leave, we'll have post-its out so they could add any final thoughts if they would like

Appendix D: Pre-questionnaire for group conversations

1. What type of organization do you represent?
    - Nonprofit organization, community organization or youth group
    - School
    - Park district
    - Government agency
    - Not affiliated with any organization
    - Other (please specify):
2. What is your role within that organization?
    - Staff
    - Management/administration
    - Board member
    - Volunteer
    - Other (please specify):
3. How long have you been with that organization?
4. How long have you worked in your field?
5. Briefly describe your organization's mission and goals:
6. Briefly describe the primary audience that you work with. Include the general age, demographic, geographical location, and number of people that you work with:
7. Briefly describe the types of activities and services that you offer:
8. Does your organization currently offer environmental education?
    - Yes

- o No

  If you answered yes, please briefly describe the environmental education programming or activities that your organization offers:

9. How does or would environmental education align with your organization's mission and goals?
10. How important is environmental education:*

	Very important	Somewhat important	Somewhat not important	Not important
To your organization	o	o	o	
To you personally	o	o	o	o
To your audience	o	o	o	o

11. What motivated you to want to attend the discussion on the future of environmental education for youth, and what are you hoping to get out of the conversation?

Appendix E: Online survey

Answer the following questions thinking about what they mean personally to you, your organization, and your audience and community

* = required question

1. Consent to participate*
    - I consent to participate in this research project
2. What are the most important goals, elements and best practices of environmental education? Select the top three.*
    - ☐ Focuses on understanding systems
    - ☐ Makes connections (social, environmental, economic, etc.)
    - ☐ Develops an understanding of our interactions with and impact on the environment
    - ☐ Is interdisciplinary and uses multiple approaches and methods
    - ☐ Is experiential, interactive, hands-on and relevant
    - ☐ Fosters an appreciation of and connection to the natural world
    - ☐ Builds awareness and knowledge about the environment
    - ☐ Creates positive experiences outdoors and helps to overcome fears
    - ☐ Focuses on developing skills and critical-thinking ability
    - ☐ Other (please specify):
3. Optionally, further explain your selections above of the most important goals, elements and best practices of environmental education:

4. What topics would you most likely use as a context for teaching environmental education? Select up to three.*

    - ☐ Waste management, including recycling, composting and hazardous waste
    - ☐ Consumption, resource use and waste reduction
    - ☐ Water quality and quantity
    - ☐ Land use and protection
    - ☐ Food and agriculture
    - ☐ Ecosystems
    - ☐ Climate change
    - ☐ Air quality
    - ☐ Energy
    - ☐ Transportation
    - ☐ Traditional or cultural practices
    - ☐ Natural history
    - ☐ Other (please specify):

5. How important is environmental education:*

	Very important	Somewhat important	Somewhat not important	Not important
To your organization	○	○	○	○
To you personally	○	○	○	○
To your audience	○	○	○	○

6. What are the most important benefits of environmental education? Think about why you do or would offer it. Select the top three benefits.*

- ☐ Increasing engagement and motivation among participants
- ☐ Providing holistic and interdisciplinary educational programming
- ☐ Increasing interest in taking action to protect the environment
- ☐ Connecting participants to their community and fostering a sense of place
- ☐ Increasing participant understanding of real-world issues and systems
- ☐ Developing critical-thinking, problem-solving, and decision-making skills
- ☐ Increasing motivation, engagement, and interest among educators
- ☐ Fostering curiosity and wonder
- ☐ Developing compassion and empathy
- ☐ Improving mental, physical, and social wellbeing
- ☐ Other (please specify):

7. Optionally, further explain your selections above of the most important benefits of environmental education:
8. What are the most important barriers to environmental education? Beyond time and money, think about what is challenging about environmental education or what stands in the way of offering environmental education or expanding your efforts. Select the top three barriers.*

    - ☐ Ability to integrate environmental education into programming and activities
    - ☐ Requirements to meet organization guidelines and/or state education standards

- ☐ Competing requirements and priorities
- ☐ Lack of access to or awareness of resources, such as funding, curriculum, training, and facilities
- ☐ Lack of interest among participants
- ☐ Making environmental issues relevant and important to your audience
- ☐ Lack of interest among educators
- ☐ Lack of educator knowledge and confidence in teaching environmental education or environmental issues
- ☐ Lack of administrative or leadership support
- ☐ Safety and liability concerns
- ☐ Challenges in building and maintaining the necessary partnerships and creating effective programs
- ☐ Other (please specify):

9. Optionally, further explain your selections above of the most important barriers to environmental education.
10. What strategies would be most effective in support or enhancing environmental education efforts? Rank the following strategies.*

- – Training and professional development opportunities
- – Support for developing partnerships and programs
- – Opportunities for networking, renewal, sharing success stories, and experiencing effective programs
- – Increasing communication about environmental education and the resources available

- Having environmental education programming available for your audience or organization to participate in
- Having grants or other funding sources available
- Increasing access to or availability of curriculum resources
- Getting buy-in from leadership or policy makers

11. What environmental education topics would you be interested in learning more about? Select all that you would be interest in.*

- ☐ Using existing curriculum and activity guide resources
- ☐ Integrating environmental education into state education standards or other requirements
- ☐ Engaging diverse audiences in environmental education
- ☐ Environmental issues, such as climate change, air and water quality, waste management, etc.
- ☐ Environmental education teaching strategies, methods and best practices
- ☐ The latest research in environmental education and how to apply it
- ☐ How to motivate behavior change
- ☐ How to integrate technology into environmental education
- ☐ Developing and using various spaces and facilities for environmental education
- ☐ Other (please specify):

12. What type of organization do you represent?

- ○ Nonprofit organization, community organization or youth group

- School
- Park district
- Government agency
- Not affiliated with any organization
- Other (please specify):

13. What is your role within that organization?
    - Staff
    - Management/administration
    - Board member
    - Volunteer
    - Other (please specify):
14. Briefly describe the primary audience that you work with (including ages, demographics, geographical location, number of people), and the types of activities and services that you offer:
15. Does your organization currently offer environmental education?
    - Yes
    - No

    If you answered yes, please describe:
16. How does or would environmental education align with your organization's mission and goals?